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British Railways, 1931-37

A VERY useful summary of important events affecting British railways since the critical year 1931 appears in the Midland Bank Monthly Review published last Saturday. In that year the financial position of the railways had become so acute as to imperil the prospects of economic fulfilment of their functions in coming years. Under stress of trade depression and road competition their gross receipts and net revenue had fallen in 1932 to the extent shown in the accompanying table. A gradual improvement will be noticed from 1933 onwards, but net revenue even in 1936 was well below the 46·5 millions secured in 1929, the last more or less normal year before the slump.

RECEIPTS AND EXPENDITURE IN £ MILLIONS

	1931	1932	1933	1934	1935	1936
Receipts from—						
Passenger traffic	71·3	67·1	67·4	68·6	70·0	72·2
Freight	90·3	81·2	80·8	85·5	86·2	90·2
Expenditure on railway working	132·6	125·2	123·1	126·8	127·4	130·6
Net receipts from railway working	30·5	24·4	26·5	28·8	30·3	33·4
Net revenue from all sources	34·2	27·2	29·6	32·3	33·7	36·5

During the period from 1931 onwards the interest on about £320 millions of debenture debt and on about £160 millions of guaranteed and rent charge stocks has been regularly met, but on preference stocks, amounting to nearly £370 millions, the return in 1932 was only 2¼ per cent., and had gradually recovered to no more than 3⅝ per cent. in 1936. On the £280 millions of ordinary stocks the average dividend in 1932 was little more than one half per cent., and even last year it had not yet touched 1½ per cent.

* * * *

Approaching Financial Crisis on American Railways

The position of the railways in the United States appears to be daily becoming more critical, and unless drastic measures are soon taken to alleviate the financial situation into which the companies have been driven during the current year, their wholesale bankruptcy would seem inevitable. Briefly the state of affairs is as follows: On the basis of the 33½ per cent. improvement in net operating income in 1936, the emergency freight charges were abolished at an estimated loss to the companies of $120,000,000 a year. Actually the loss has proved to be about $150,000,000, and, in addition, advances in prices have involved increased expenditure amounting to $125,000,000, the five-cents-an-hour increase in wages to other-than-train-crew employees has cost $98,000,000, and now the passing by the Senate of the bill limiting trains to 70-car loads, is estimated to involve the spending of a further $150,000,000. But these losses or increased costs totalling $523,000,000 are not all, for the companies are faced with a further increase in working expenses of $116,000,000 if the 20 per cent. increase in wages demanded by the train-crew unions has to be granted. In fact, 95 per cent. of the $667,000,000 net earned in 1936 will thus be swallowed up, and in place of the hoped-for 33½ per cent. increase in traffics, there has been a steady reduction culminating in a deceleration during the past three months to only about 5 per cent.

* * * *

The Week's Traffics

The 5 per cent. increase in tariffs was in operation last week on three days in the case of the L.M.S.R., G.W.R., and Southern, and on two days in the case of the L.N.E.R. For the week the combined increase shown by the four companies was £146,000, compared with £125,000 for the previous week. The aggregate receipts of the four companies for the 39 weeks of the current year amount to £123,583,000, an increase of £5,137,000 or 4·34 per cent. On the passenger side the increases are:—L.M.S.R. £786,000 or 3·91 per cent.; L.N.E.R. £589,000 or 4·51 per cent.; G.W.R. £250,000 or 2·92 per cent.; and Southern £656,000 or 5·27 per cent. Merchandise increases are:—L.M.S.R. £542,000 or 2·93 per cent.; L.N.E.R. £464,000 or 3·68 per cent.; and G.W.R. £316,000 or 4·25 per cent. Coal class traffics show the following increases:—L.M.S.R. £564,000 or 6·09 per cent.; L.N.E.R. £600,000 or 6·70 per cent.; and G.W.R. £454,000 or 11·74 per cent.

	39th Week				Year to date	
	Pass., &c.	Goods, &c.	Coal, &c.	Total	Inc. or Dec.	
	£	£	£	£	£	%
L.M.S.R.	+ 12,000	+ 15,000	+ 20,000	+ 47,000	+ 1,892,000	+ 3·95
L.N.E.R.	+ 2,000	+ 3,000	+ 35,000	+ 40,000	+ 1,653,000	+ 4·77
G.W.R.	+ 12,000	+ 14,000	+ 13,000	+ 39,000	+ 1,020,000	+ 5·13
S.R.	+ 14,000	+ 2,000	+ 4,000	+ 20,000	+ 572,000	+ 3·55

London Transport receipts for the past week show an increase of £19,800, making the improvement for the financial year to date £21,500.

* * * *

Six Months' Passenger Traffics

British standard gauge railways (excluding London Transport) are shown by the recently-published Ministry of Transport statistics to have carried during the first six months of 1937 a total of 435,439,062 passengers (excluding season ticket holders). This means an increase of 24,406,300, or 5·94 per cent., in comparison with the first half of 1936. They produced receipts of £22,389,980, which were higher by £1,528,714, or 7·33 per cent. Standard fare passengers increased by 10·14 per cent. in

numbers and brought in 9·15 per cent. more in receipts, which were £3,339,822, or 14·92 per cent. of the total received apart from season tickets. First class ordinary receipts during the six months amounted to £1,961,501, an increase of £209,653 or 11·96 per cent., and they represented 8·76 per cent. of the total passenger receipts apart from season tickets. The second class receipts of the Southern Railway are a definite indication of the expansion in Continental traffic. For the six months they were £243,183, an increase of £80,302, or 49·31 per cent., and for the month of June the advance was as much as 57·83 per cent. Season ticket receipts during the six months for all standard gauge railways amounted to £4,297,772, an increase of £108,422 or 2·59 per cent. Of this amount £839,434 came from first class tickets, a net increase of £810. Parcels and miscellaneous traffic receipts, at £6,291,430, were higher by £50,687, or 0·81 per cent. Total receipts from passenger train traffic (excluding mails and parcels post) amounted to £32,979,182, an increase of £1,687,823, or 5·39 per cent.

* * * *

Overseas Railway Traffics

On the Central Argentine Railway the rate of decrease in earnings has fallen slightly from the £40,804 in the previous fortnight to the £31,624 of the past two weeks. Traffics were affected in the 13th week by two days' rain. An improvement of £24,207 during the fortnight is shown by the Buenos Ayres Great Southern, of £8,807 by the B.A. Western, and of £5,475 by the Pacific. The San Paulo increase for the first three quarters of the present year is £132,785, with an improvement of 5,079 contos in currency. Leopoldina receipts show an increase for the 40 weeks of £174,531 and 6,203,000 milreis, but the Great Western of Brazil is down for the same period by £5,800 and 3,062 contos.

	No. of Week	Weekly Traffics	Inc. or Decrease	Aggregate Traffic	Inc. or Decrease
		£	£	£	£
Buenos Ayres & Pacific ..	14th	80,335	+ 3,100	1,084,554	+ 64,685
Buenos Ayres Great Southern ..	14th	119,169	+ 7,169	1,634,802	+ 133,900
Buenos Ayres Western	14th	45,285	+ 3,697	626,428	+ 85,844
Central Argentine	14th	137,087	— 9,807	1,842,510	— 43,743
Canadian Pacific	39th	954,600	+ 20,600	21,020,400	+ 1,031,600
Bombay, Baroda & Central India	26th	226,350	+ 9,150	4,366,650	+ 316,950

The Canadian Pacific gross increase for the first eight months of 1937 is £1,023,200, and the net increase is £305,600. For the first three quarters of the present year the company records a gross increase of £1,031,600.

* * * *

Rehousing Scheme for Euston Tenants

The first step in an £86,000 scheme for re-housing nearly 600 persons who will be displaced from dwellings in the Euston area by the forthcoming reconstruction of Euston station was taken yesterday (Thursday) afternoon by Sir Josiah Stamp, Chairman of the L.M.S.R., when he laid the foundation-stone of a new estate. This estate, which will comprise five blocks of flats of the most modern type, is being laid out on a plot of 2¼ acres of land belonging to the L.M.S.R. at York Rise, Highgate Road, N.W.5, and will accommodate some 120 families who are at present tenants of houses belonging to the railway in the Drummond Street area, lying between Euston station and Euston Square. It is expected that the new flats will be ready for occupation in about 18 months. They are being built for the L.M.S.R. by the St. Pancras House Improvement Society Limited, which was founded in 1924 by the late Father Basil Jellicoe, and Miss Edith Neville, O.B.E., its present Chairman. After the laying of the foundation-stone by Sir Josiah, it was blessed by the society's organiser, the Rev. N. W. Scott. The new buildings, designed by the society's architect, Mr. Ian B. M. Hamilton, will be only four storeys high and will have no external approach galleries, but a common staircase giving access to a pair of flats on each floor. These will be of three, four, and five rooms, but on the ground floor there will normally be three flats on each staircase of one and two rooms only, suitable for aged persons. For sound resistance the dividing walls between flats will be of 9-in. brickwork. In the arrangement of these premises it has proved possible to incorporate a number of improvements which have been indicated by the extensive experience obtained from the various estates previously laid out on behalf of the society.

* * * *

L.M.S.R. Education Films

We recently had an opportunity of viewing "Anytown," "Cargo," and "Sentinels of Safety," three of the L.M.S.R. educational films mentioned in our issue of September 17, which were shown at Euston station, London, as a preliminary to being sent out on a tour of England, Scotland, and Wales. The L.M.S.R. may congratulate itself on having produced in these films a publicity medium which cannot fail to bring home to even the most unreceptive of minds something of the romance of a great railway system. It is to be hoped that the privilege of seeing these striking productions will not be confined to the L.M.S.R. staff alone. We should like to see them in the future exhibited in schools, colleges, and other educational centres throughout the country, where they would make a not easily forgotten impression on the youthful mind. These films also, by happily combining education and entertainment, should not prove unpalatable to the general public. There are many clubs, societies and other gatherings where we feel sure they would meet with an appreciative reception, and in this sphere these films would do much to awaken or stimulate an interest in railways and gain an appreciation supplemented by factual knowledge of the enormous part played by the railways as public carriers.

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Train Service Modernisation, L.M.S.R.

The acceleration of the Midland Section trains between St. Pancras, Manchester, and the Midlands, which came into effect with the current winter timetables and of the actual running of which we give some details in our news section this week, has been made possible by the provision of the modern locomotive power now available as a standard feature of most sections of the L.M.S.R. The records just referred to clearly indicate that the new schedules are well within the capacity of the locomotives, and it is welcome news that the L.M.S.R. is about to carry out further preliminary tests with standard locomotives on other sections where timetable revision is desirable. The new trials, which will be made by special trains with a dynamometer car and a Hallade recorder as in the previous trials, are to take place next week between Bristol, Leeds, and Glasgow (St. Enoch). The pursuit by the L.M.S.R. of complete modernisation is one of the most creditable aspects of the present administration. The progress in this direction of both the Motive Power Department, including construction and maintenance, and of the Goods Department has recently been the subject of comprehensive articles in these pages. Now the passenger side of the business is receiving the attention it deserves and we look forward to the complete modernisation of train services throughout the system before long. These measures are not accomplished without much planning and pre-arrangement which, to judge from the results now being achieved, are being very carefully thought out.

Steel Rolling Stock in France

Certain recent railway accidents in France, in which the victims have nearly all been in wooden coaches that were smashed, whereas steel coaches in the trains concerned have come off with very little damage and negligible casualties to their occupants, have apparently aroused public opinion to the extent that the Government is urging the acceleration of the programme adopted some time ago for providing sufficient steel coaches for all main-line trains. Only about a half of the 8,000 coaches estimated to be required for this purpose have so far been built, financial stringency having retarded the programme. It is probable that recent technical developments, as exemplified in the latest all-metal coaches for the French State Railways (described in THE RAILWAY GAZETTE of May 21 last) whereby a weight reduction of from about 46 to 35 tons has been achieved for the same seating accommodation, may ease the financial position. On mass-production methods such comparatively light coaches ought to be considerably cheaper to build than the older and heavier type because of the saving in metal. Similarly the saving in train weight would be an appreciable item in working economy.

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A Failure to Restore Signals to Danger

A summary of Lt.-Col. Woodhouse's report on the collision in a thick fog at Bow, L.M.S.R., on April 1, will be found on page 620. The cause was a signalman failing to restore a disc signal at a siding outlet, and a starting signal, to " danger " behind a late running empty carriage train. He said he was occupied on the telephone at the time. Another such train, just due to go, departed almost immediately under the false clear signals and overtook the first as it stood in Bow station. In this connection it is of interest that some Continental lines adopt the principle that wherever a train can depart on signals cleared for a previous one without action on the part of the signalman, as in this instance, automatic signal replacement must be provided. Such a safeguard is particularly valuable in bad weather. Col. Woodhouse refers to the difficulties of getting fogmen to their posts when they live scattered over a wide area—which difficulty can hardly be overcome without having every man on the telephone—and emphasises the desirability of extending colour-light signalling on lines subject to fog and carrying dense traffic. With electricity so readily available, better lights might well be fitted to existing semaphores in the meantime.

* * * *

Rhine Bridges

As we recorded briefly last week, work is to be begun before the end of the present year on the demolition of the Rhine railway bridge at Huningue. In addition, the two bridges at Kehl, near Strasbourg, for railway and road traffic respectively, are to be raised. Since the transfer of Alsace to France, railway traffic between Huningue and the right bank of the Rhine had been reduced to a minimum, and an agreement for the demolition of the railway bridge was reached between France and Germany in November, 1934. It has now been decided to remove the metal superstructure of the bridge, leaving the abutments in place on both sides of the river. The raising of the Rhine bridges at Kehl is to be carried out to facilitate navigation on the Basle—Strasbourg section. It has been decided to raise the bridges 7 metres above the surface at low water with 4·65 metres in the channel at Rheinfelden. Switzerland, Germany, and Holland demanded a raising of nine or ten metres, and these wishes have been so far taken into account that it has been arranged that at high water ships not able to pass under the bridges at Kehl owing to their size will be diverted and towed free of charge via the port of Strasbourg. As the Versailles Treaty awarded the control of the Rhine bridges to France, that country will be responsible for most of the work, which it is estimated will take two years. The French Parliament has voted a credit of fr. 20,000,000 for the whole of the work at Huningue and Kehl.

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A Constant-Torque Main-Line Locomotive

Not for the first time in history, but perhaps on a more ambitious form than anything previously attempted, there has now been planned for service on the Baltimore & Ohio Railroad, a sixteen-cylinder constant-torque steam locomotive, and of this we give a short illustrated description on page 606 of this issue. The principle involved, namely that of individually-driven axles as in electric locomotives, has much to commend it in steam locomotive practice. It improves the acceleration and makes a steady power output easier of achievement than where reciprocating cylinders driving through rods are used. The idea underlying this design is that of producing a continuous flow of power, similar to that of a multi-cylinder motor vehicle, together with smooth running and minimum vibration. The new locomotive is designed to developed 5,000 h.p., and be capable of handling 14 standard Pullman cars at a speed of 100 m.p.h. on straight level track. A special form of boiler is utilised, having the Emerson watertube type of firebox. The sixteen cylinders are planned on the Besler system, the application of which to a railcar on the New York, New Haven & Hartford RR. we described in THE RAILWAY GAZETTE of March 12 last. In the B. & O. locomotive there are four driving axles each with a four-cylinder motor directly geared to it, so that with each revolution of the motors, there occur 32 power impulses. No counterbalance weights are used, or, indeed, are necessary. The starting tractive power will be 72,500 lb. giving a factor of adhesion of 3·6, which is more than ample where there is constant torque.

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London Tube Names

Londoners seem to have accepted without demur the renaming a few weeks ago by the London Passenger Transport Board of two tube lines, although it has been suggested to us by more than one reader that " North—South Line " would have been a happier choice than " Northern Line " for the Morden—Edgware tube. The impending projections beyond Highgate and Edgware will give an added prominence to the Middlesex end of this line, but the southern terminus at Morden in Surrey is also important, and the stranger within our gates may fail to realise that the word " northern " in the London Transport vocabulary embraces a point so far south of the Thames. Curiously enough, most of the " Letters to the Editor " inspired by these changes in names have dealt with the origin of our one home-grown portmanteau tube word " Bakerloo," which long since has both endeared itself to the cockney and also made itself known —like THE RAILWAY GAZETTE—" wherever there are railways." So far, no sacrilegious hands are being laid on this name, but the official statement that there is nothing in the archives of London Transport to show who invented the word acted as an incentive to a host of amateur sleuths to solve the mystery. There is little doubt that the name was the product of a fertile brain in Fleet Street in 1906, and, failing proof to the contrary, we rely on our own memory that the originator was " Quex " of *The Evening News* (the late Capt. G. H. F. Nichols). It was used in our own columns on June 29, 1906, and its popularity earned early official recognition.

Sir Herbert Walker

DURING a quarter of a century of railway management, and through several crises, Sir Herbert Walker, K.C.B., who retires from the general managership of the Southern Railway on October 14, has achieved a world-wide reputation among railway officers. In the history of British railways he certainly will rank as a great railwayman. This may not be fully appreciated by the general public or the daily press, as self-advertisement is repugnant to his nature. He has never been a "limelight man." His early career on the London & North Western Railway is another proof of the fact that the foundations of any great edifice must be well and truly laid. For over fifteen years he occupied various positions on the staff of district superintendents, including nine years as assistant superintendent of the Southern Division of the L.N.W.R. before being appointed divisional superintendent. He is a railwayman who knows every detail of his job, as is evidenced by the quickness with which he can point out the weak spots, or suggest alterations, in a plan for a new works scheme. Another characteristic is his amazing ability to grasp and handle figures. But combined with his mastery of detail, he has both vision and courage, as exemplified by the electrification, notwithstanding criticism and trepidation of some of his directors and officers at the outset, of the Southern Railway suburban and outer-suburban systems and the lines to Brighton, Eastbourne, Hastings, and Portsmouth, and also the great extension of Southampton Docks.

When he was given the task of merging the working of the former North London Railway into that of the London & North Western, it was evident that he was marked out for high position in that company. In 1911, however, the Board of the London & South Western Railway was seeking a General Manager in succession to Sir Charles Owens, and three names were considered. Sir Herbert Walker was offered and accepted that post as from January 1, 1912. He has thus been General Manager of that system and the much greater Southern Railway, for over 25 years. At the time of his appointment, the undertaking had a mileage of 979, gross receipts of approximately £5,797,000 per annum; owned 748 locomotives; 4,246 passenger vehicles; 14,849 goods vehicles, and 20 steamers. Today the Southern Railway has a route mileage of 2,184; gross receipts of approximately £24,268,000 per annum; owns 1,852 steam locomotives; 1,184 electric motor vehicles; 7,044 coaching vehicles, and 35,660 merchandise, mineral and service wagons. Its staff totals 67,735.

At the time he became General Manager, the rebuilding of Waterloo station was in progress. The work, however, was not so far advanced but that he was enabled to effect great economy in the reconstruction scheme as originally planned. The question of suburban electrification was then much to the fore, and within four years of Sir Herbert Walker's General Managership the first electrified section of the London & South Western Railway (between Waterloo and Wimbledon) was opened in 1915 on the 600-volt d.c. system, which has now been adopted as the standard practice. Since the war, electrification has made rapid strides, and with the merging of the London & South Western, London, Brighton & South Coast, and South Eastern & Chatham Railways into the Southern Railway, this undertaking now operates the largest suburban electrified section of any railway in the world. With its main line electrification to Brighton, Eastbourne, Hastings and Portsmouth, it has a total electrified route mileage of 542.

To revert to his first years on the L. & S.W.R., Sir Herbert had, however, little time to develop improvement schemes for that line, for in two and a half years after his appointment as General Manager, came the outbreak of the Great War. Owing to the untimely death of Sir Frank Ree, he found himself Acting Chairman of the then secret Railway Executive Committee, and continued as Chairman throughout the war period, with Colonel Gilbert Szlumper as Secretary. During this trying period he was executive chief of the whole British railway system under Government control. This meant long and tedious days at Westminster, in addition to the management of the South Western Railway, which, owing to its geographical position, had a large share in the war transport. Only a man physically strong could have withstood the strain; and throughout this trying period, whatever he may have felt, he always gave the impression of unruffled imperturbability and being endowed with extraordinary patience. This characteristic he has displayed throughout his career and it has been particularly noticeable when he has taken the chair at important conferences at the Railway Clearing House and elsewhere. After the war came the necessity of facing conditions and crises such as pre-war railway general managers never had to encounter. These included the formation of the Ministry of Transport, the railway strike of 1919, the complete revision of rates of pay and conditions of service of railway employees, the grouping of the railways, the Rates Advisory Committee (formed in the hope of giving railways their pre-war standard revenue) and more recently road motor competition, and the great trade depression during the years following 1930.

His ability to make quick decisions and to keep to them, has been one of the characteristics most appreciated by his colleagues and subordinates throughout his long tenure of office as General Manager. The decisions he made were quick when it was necessary, but when time permitted, as it did in regard to most questions of major policy, he spared no pains to investigate every aspect of a question thoroughly beforehand. At all times he would give a fair and courteous hearing to informed criticism whether from inside or outside the railway world. What has been accomplished even in the first fourteen years existence of the Southern Railway under his guidance testifies to the soundness of his judgment. He was an early advocate of systematic train services and simplification of timetables. It was in 1921 that the Bournemouth services were first rearranged to give departures at the half hour from Waterloo; a practice which received a great fillip with the introduction of electrification, to which services systematic timings have been applied throughout. The standard services of the Southern Electric have provided facilities for the public beyond the dreams of a generation ago, and they have also produced their reward to the railway company by the financial results.

Always quick to seize opportunities, the capital development of projects judged by him to have a profitable future has been justified by such enterprises as the development of Southampton Docks and the Dover-Dunkerque train ferry, not to mention the modernisation and development of the various cross-Channel steamboat services. South Coast resorts and the Isle of Wight have become increasingly popular holiday places, thanks mainly to the development of the train services, combined with efficient publicity. Sir Herbert Walker leaves the Southern Railway at a time of its increasing prosperity and high efficiency. He will enter on his retirement with the esteem and we may even say, the affectionate regard of all who know him.

Beira and Mashonaland and Rhodesia Railways

A TOTAL length of 2,708 miles on the 3 ft. 6 in. gauge is included in this system, of which 197½ miles are in Moçambique (Portuguese) Territory, 112 miles in the Cape Province, and 399 miles in the Bechuanaland Protectorate. The 589 miles extending from Vryburg to Bulawayo, including the Matopos branch, are operated by the South African Railways, and the remaining 2,119 miles, though now belonging to three (formerly four) separate companies, are worked by the Rhodesia Railways administration. Bulawayo is the effective centre of the system, from which railways extend to the border of the Belgian Congo on the north, into Bechuanaland on the south, and to the port of Beira on the east. According to the report for the financial year ended September 30, 1936, which we have received from the then General Manager, Sir Henry Chapman, C.B.E., there was a continued expansion of traffic, with the principal exception of copper, which was affected by the quota restriction scheme. Gross receipts were less by £108,206 or 2·4 per cent. and expenditure rose by £155,409 or 5·9 per cent., making a decrease of £263,615 or 13·6 per cent. in the net operating revenue compared with the year 1934-35. Gross earnings and net operating revenue were, with the exception of 1934-35, higher than in any year since 1929-30.

Although the total tonnage conveyed was the highest, with two exceptions, in the history of the railways and exceeded that of the previous year by 166,156 tons or 7·2 per cent., it was accompanied by a net decrease of £165,538 or 4·42 per cent. in goods and mineral receipts. This was due to a falling off in long distance traffic for the mining companies in Northern Rhodesia consequent on the copper restrictions scheme, and to the appreciable increase in the low rated traffic. Passenger business continued to show encouraging improvement, particularly in the numbers of third class and native passengers. On the working of the road motor services there was a profit of £1,616 for the year under review, comparing with a loss of £784 in the previous year. The accompanying table compares some railway operating figures:—

	1935–36	1934–35
Passengers	734,234	696,439
Total tonnage	2,458,544	2,292,388
Operating ratio, per cent.	62·46	57·57
Train-miles	5,220,085	4,980,596
	£	£
Passenger receipts	357,060	338,787
Goods and mineral receipts (excluding departmental)	3,744,242	3,909,780
Gross earnings	4,450,426	4,558,632
Gross operating expenses	2,779,687	2,624,278
Net earnings	1,670,739	1,934,354

The rise in expenditure is quite understandable in view of the larger tonnage handled (involving a marked increase in train-mileage); of the facts that the complete restoration of the balance of temporary pay deductions and the reversion to full time in the workshops were in operation during the whole of the year under review as against seven months in the previous year; and because of the increase of £56,219 in the pension fund contribution. Transportation and traffic (commercial) expenses were higher by £37,054 or 3·7 per cent., whereas train-mileage, engine-mileage, and tonnage carried were greater by 4·8, 4·7, and 7·2 per cent. respectively. The diesel-engined railcar placed in service on the Shamva branch in September 1935 is being increasingly patronised by passengers and for the conveyance of light goods, parcels, agricultural produce, &c. Accelerated timings have been given to the more important passenger trains. Maintenance of the track on the Fort Victoria and Sclukwe branches by motor trolley gangs continued to prove both satisfactory and economical, and this system of maintenance is being extended to the branch lines in Northern Rhodesia. It was decided during the year to embark upon a comprehensive programme of renewals with 80 lb. instead of 60 lb. rails. The programme of renewals covers 742 miles of the main line between Salisbury and Kafue, and work was put in hand during the latter part of the year on the 160 mile section between Salisbury and Hunter's Road.

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The Egyptian State Railways

THE report of the Department of Overseas Trade on Economic and Commercial Conditions in Egypt* gives the following figures relating to the working of the Egyptian State Railways:—

	1935-6 £E.	1934-5 £E.
Gross receipts	5,145,246	5,119,761
Working expenses	4,429,098	3,726,835
Government proportion (25 per cent. of receipts)	1,286,312	1,274,961
Deficit	570,164	—
Surplus	—	117,965
Balance workshops account	(*Dr.*) 320,715	(*Cr.*) 66,176
To Railway Reserve Fund	(*Dr.*) 890,879	(*Cr.*) 184,141

The general railway reserve fund, which showed a credit of £E.539,671 at the end of the financial year 1934-5, was converted by the shortage of 1935-6 into a debit balance of £E.351,208, but it is pointed out that in the working expenses of the latter period the total included expenditure under the head of capital works. With an increase of only £E.25,000, or 0·05 per cent., in gross receipts to meet an increase of over £E.500,000, or 14 per cent., in working expenditure, and with small expectation of any improvement in revenue while there is every indication of a rise in operating cost, net receipts must continue to show a steady and progressive decline.

In 1935-6 passenger traffic declined by 568,000 in number and £E.83,000 in receipts, whereas public merchandise in the same period increased by 365,000 tons and £E.81,000 in receipts. The report points out that the Egyptian Government has always looked upon the State Railways as an important source of revenue, as indeed they were when railway profits were more easily come by than today, and to ensure a continuance of such a happy state of affairs the Council of Ministers decided in 1935 that 25 per cent. of the gross receipts should be appropriated annually to the Government, without regard to the figure which might be attained by working expenses, capital works, repairs and maintenance. Results for 1936-7 are estimated at £E.5,184,500 for gross receipts and £E.4,048,500 for working expenses, with a further amount of £E.601,000 for new works, and as the fixed Government proportion will amount to £E.1,272,500, a deficit to be budgeted for of £E.737,500. The shortage is to be met by a sum of £E.136,500 to be debited to the administration's general reserve fund, already considerably in deficit, and a Government loan of £E.601,000 drawn on the Government's general reserve fund.

Under the head of new works the principal item is the Fuka to Mersa Matruh extension, authorised in 1935 and illustrated and described in our issue of July 24, 1936. As we then recorded, work was begun on January 1, 1936, and 77 days later the line, 79 km. in length, was completed to within a short distance of Mersa Matruh, where

* No. 676, of May, 1937, published by H.M. Stationery Office.

rock formation delayed operations. The construction of this line included four bridges and four stations, and the work was carried out in the face of considerable difficulties owing to lack of water and frequent sandstorms. The completion of the line in such a short time constituted no mean engineering feat on the part of the staff of the State Railways. In 1936 also the contract for the new bridge over the Nile was awarded to a Continental firm.

Under the head of rolling stock, it is noted that 15 side-tank locomotives were purchased from the United Kingdom early in 1936. On October 11, 1935, a passenger service between Cairo and Suez, 129 km., over the new direct line, was inaugurated with diesel railcars containing first and second class accommodation. This new line was described and illustrated in THE RAILWAY GAZETTE of October 11, 1935, at page 592. Two daily services are operated each way, in a running time of about 2 hr. as compared with the previous fastest time of about 5 hr. by the indirect route *via* Ismailia. A diesel railcar service has also been running since December, 1935, between Cairo and Helwan, in addition to the ordinary train service. The journey of 15 miles takes about half-an-hour including stops. The question of electrification of this line has now been left in abeyance until such time as the construction of a tube railway joining Helwan to Mataria, with an underground central station beneath Cairo, appears justified. A fast diesel railcar service was instituted between Cairo and Port Said, leaving Port Said at 7 a.m. and arriving at Cairo at 10.35 a.m. thus enabling travellers to spent a full day in Cairo before returning to Port Said. The management and operation of all the Egyptian State Railway road passenger omnibuses is now in the hands of the Eastern Commercial Company, in which the State Railways hold 51 per cent. of the shares. The company owns a fleet of 97 omnibuses for the whole service. The system inaugurated in August, 1935, for the collection and delivery of parcels by express and passenger trains at Cairo has been extended to cover personal luggage, and also to baggage from steamers at Alexandria to passengers' private addresses. It may be extended to other large towns. The mileage of the Egyptian State Railways, open for traffic in 1936, was 2,973, excluding auxiliary lines and the Western Oasis line.

* * * *

Efficient Engine Driving

THE systematic training of enginemen in the efficient handling of their locomotives has been advocated so often in these columns that it is a pleasure to record the progress of the Federation of Enginemen's Mutual Improvement Classes. These classes existed for many years all over the country as isolated units, but the bringing into one movement, two years ago, of all these units—based on locomotive depots as far apart as Dundee and Fratton, Neath and Heaton Junction—has greatly extended their scope and usefulness, and brought into being what is virtually a technical institution of locomotive enginemen. The classes are taken by instructors whose enthusiasm seems to know no bounds; men, for example, like Driver A. F. Hunt, of Oswestry, whose booklet "Descriptive Diagrams of the Locomotive" we review elsewhere in this issue; and men to whom the footplate provides not merely a livelihood but also a fascinating hobby. To such as these, lecturing at mutual improvement classes is a prized honour, even though it may be fraught with considerable personal expense. Their lectures are given on a well-thought-out and detailed plan calculated to be of the greatest advantage to all who attend.

Enthusiasm and a man's determination to get the best out of his engine can, however, be futile without a proper understanding of the machine. But it is evident that the federation has no lack of instructors with a sound theoretical knowledge to back up their practical experience, and who know also exactly when so-called theory must be put on one side; in short, they are first class enginemen. It is particularly refreshing to read notes like those of Driver Hunt on notching-up. There is surely no appliance in the history of mechanical engineering that is less understood by the men who use it than the reversing gear of a reciprocating steam locomotive. The variations that one notes in its manipulation, even on the same engine and under similar conditions, are well-nigh incredible. At one time it was common practice for drivers to fix the gear at about 45 per cent. cut-off and drive entirely on the regulator; the general adoption of long-travel valves and higher boiler pressures called for more scientific methods, yet even now, with the latest engines having very effective internal streamlining, one not infrequently observes a form and handling akin to that of the old inefficient days of short-travel valves. These modern locomotives, with so much power in reserve that they can work a 500-ton train punctually on a 60 m.p.h. start-to-stop booking on no more than 15 per cent. cut-off up hill and down dale, are not infrequently driven without varying that cut-off on the whole run. The result is that speed may fluctuate as widely as between 40 m.p.h. uphill and 90 m.p.h. or more on the down grades, whereas, by well-timed increases of 3 or even 2 per cent. in conjunction with a wide-open regulator, the uphill speed can be greatly increased, so obviating very high downhill speeds.

It is perhaps not the fault of modern enginemen that they often fail to realise the potentialities of "the lever." On older types, giving the engine "another notch" meant an advance of quite 10 per cent. in cut-off, and considerably heavier coal consumption. But on modern locomotives a very much smaller increase with the regulator wide open will make an enormous difference, seemingly out of all proportion to a half turn of the wheel. Such methods give better timekeeping, leave more margin in reserve to offset possible delays, and—boon to the traffic operator—increase track capacity by less variation in speed. Although the matter of making up lost time is in this country always left to the driver's discretion, enginemen are now encouraged to do so by such publications as the L.M.S. *On Time*, and indirectly from the publicity given to praiseworthy runs in our contemporary *The Railway Magazine*. In the latter it was recently suggested that it might be possible to bestow an Order of Merit—a kind of D.S.O. of the footplate—upon crews who perform some exceptionally meritorious piece of work. Such an order, not too freely given, would be a further incentive to good, skilful enginemanship. Through the Federation of Enginemen's Mutual Improvement Classes the men themselves are making no mean contribution towards the efficient handling of locomotives, and it should not be forgotten that these classes meet in off-duty hours and that their organisation and running call for patience and careful arrangement on account of the varying hours of employment of footplate men. Attendance at meetings under these conditions in consecutive weeks is often quite impossible for individual enginemen, but a single quotation from Driver Hunt's book is enough to show the excellent spirit behind the movement: "The Old Lady has to be fed. The Good Old Days, when they had wooden fireboxes, and the driver used to step on his beard are past. We have modern machines, and it is up to us to get the best out of them. . . ." This is a movement it should pay the railways handsomely to encourage.

LETTERS TO THE EDITOR

(The Editor is not responsible for the opinions of correspondents)

The First Sudan Railway

Sudan Railways, Atbara
September 17

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—Do any of your readers happen to possess, or know the whereabouts of, any photographs, drawings, or contemporary descriptions of the old Soudan Railway which was begun in 1871 and left with its terminus "in the air," in 1876?

The scheme to unite Egypt and the Sudan by a railway was projected by the Khedive Ismail, who called in Mr. (afterwards Sir) John Fowler, the celebrated engineer, to make a survey. Fowler's report appeared in 1873. The principal contractors were Appleby Bros., of London. Work began at Wadi Halfa, the northern end, and continued intermittently until 1876, when General Gordon, then Governor-General of the Sudan, caused track laying to be suspended. Nevertheless the 30 completed miles of line were operated with a certain limited success until the arrival of the Expeditionary Force, sent to relieve Gordon at Khartoum, in 1884.

We have no information on the organisation or the running of the line other than the fragmentary reports of military officers with the Expeditionary Force. We know nothing of the handful of British officials, including the contractors' staff, who played their part in the construction. We know next to nothing of the rolling stock, and who ran it. It is almost a lost railway, a mystery to the student of railway history.

RICHARD HILL

Midland Timetable Reorganisation

Reform Club, Pall Mall, S.W.1
September 28

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—I hesitate to add anything to your excellent comments on the new Midland timetable. But there is one neglected opportunity so glaring that I think it deserves attention, namely, the almost complete absence of satisfactory connections between the Bristol trains and Manchester trains at Derby. The Midland is never likely to afford the *best* route from Manchester to Birmingham and the West. But it is capable of offering a useful *alternative* route.

If on some future occasion the Midland Anglo-Scottish services are overhauled, I suggest that these might be timed to leave St. Pancras a half hour or so *after* the Manchester departures (not as at present before). If this were done the Bristol trains could be timed to arrive Derby shortly before the Manchester trains, and Sheffield or Leeds shortly before the Scottish trains. At present the Derby connections are almost as bad as could be, while the West of England-Scotland connections (the down Thames-Forth and up mid-day trains excepted) leave much to be desired. To give the more even spacing of London-Leicester trains which you advocate the Anglo-Scottish trains could perhaps be routed via Nottingham, and other trains now using that route diverted to Leicester.

I am, Sir, your obedient servant,

P. A. WILSON

60-m.p.h. Trains to Birmingham?

St. Wilfrid's Vicarage, Brighton
October 3

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—The recent accelerations on the Midland section of the L.M.S.R., by which the Midland cities of Leicester and Nottingham can now be reached from London by trains running at a start-to-stop speed of 60 m.p.h., provokes further comment on the inadequacy of the train services between London and Birmingham. Here are the two largest (and most prosperous) English cities, 110 miles apart, with a large volume of passenger traffic passing between them, but in this year of speed, 1937, when a business man can find trains to take him from London to Bristol, Leeds, Newcastle and Edinburgh at start-to-stop speeds in excess of 60 m.p.h., it is impossible for him to travel to Birmingham at an overall speed of 60 m.p.h.

The L.M.S.R. has managed—after 30 years—to reduce the journey time for the 112 miles by this route to 115 minutes, but the G.W.R. has actually decelerated its trains—an unfathomable mystery this—and with only four 2-hour trains down and one up can hardly be said, in these days, to have an express service at all. In fact, the Great Western now offers its customers a service distinctly inferior to that of 27 years ago! The many visitors from abroad whose business takes them to the Midland capital cannot gain a very good impression of British railway progress when they return year after year to find this important service unaffected by the speeding-up movement which has had such a marked effect in their own countries.

Can it be asking too much of the Great Western authorities to accelerate some of their trains, and of the L.M.S.R. to do for the greater Birmingham what it has done for the other Midland cities? There is no technical reason against running at least two services scheduled to do the trip in 105 minutes.

Yours truly,

W. A. E. WESTALL

The Germs and Development of Some Mechanical Inventions

We are indebted to Mr. C. F. Dendy Marshall for a copy of his recently-printed presidential address, under the above title, to the Newcomen Society. The brochure, which we gather is for private circulation, is an excerpt from Vol. XVI of the *Transactions* of that society. The author's extensive collection of scarce books and illustrations dealing with early engineering is well known, and at the reading of the paper some 19 volumes ranging in date from 1589 to 1825 were exhibited. It is from these that the address, which deals principally with the early history of steam engines and pumps, is compiled, and therefore it constitutes a valuable reference work as the text is fully annotated. There are, however, various misprints in the quotations of titles of books in foreign languages, and this is to be regretted in a brochure which is likely to be quoted by future writers.

Rail transport is represented by some rare early illustrations and references to sixteenth century mining railways, and to Ralph Allen's famous eighteenth century Combe Down wagon-way, which forms the subject of an illustrated article by Mr. Charles E. Lee elsewhere in this issue. Mr. Dendy Marshall also includes brief mention of very early road transport, such as the little-known experiments of Father Verbiest in China about 1680 with a steam automobile, and Sir George Cayley's caterpillar arrangement which was illustrated in the "Encyclopædia Londinensis" in 1827.

FACTORY TRANSPORT BY RAIL.—Two London factories are being moved and concentrated in a new building at Cheltenham. The work, which began on Monday, is being carried out by the G.W.R. It has been planned so that there may be no break in output during the time of the removal. The factories are those of Walker Crosweller & Co. Ltd., manufacturer of steam traps and recording instruments. The contents include 44 tons of machinery, 60 tons of stores, and 14 tons of office furniture. The furniture and personal effects of fifty members of the staff are also included. All this is being conveyed in 135 containers, which are providing more than a door-to-door service, as the railway employees are removing the machinery from its place in the London factories and placing it in position in the Cheltenham factory, ready for assembly.

PUBLICATIONS RECEIVED

The Economics of Rail Transport in Great Britain. Volume II: Rates and Service. By C. E. R. Sherrington. Second Edition. London: Edward Arnold & Co., 41 and 43, Maddox Street, W.1. 8¾ in. × 5½ in. × 1¼ in. 336 pp. Folding and other plates. Price 12s. 6d. net.—When the two volumes of the original edition of Mr. Sherrington's work on "The Economics of Rail Transport" appeared in 1928, we described it as on the whole the most important work ever published on rail transport economics in Great Britain, and the revised edition of Volume II which is now before us fully deserves the same appreciation. When considering a revision of the original work—now nearly ten years old—Mr. Sherrington had the alternatives of complete rewriting, or revision, and chose the latter for the second volume, the first volume, largely of a historical nature, being reserved for a future edition which we fully expect will be called for in due course. The revised second volume follows the same lines as those of the first edition, and the author's explanation of it, as in the first instance, still holds good. It is the study of business in its social aspect as applied to railway transport and deals with the financial structure, the organisation, and the methods of charging for services rendered by the railways. The main lines of the original edition are closely followed, with the same chapter headings throughout, and the same number of pages, so that the same ease of handling is preserved, and useful comparison may be made with the older edition, from which, in the new edition, nothing essential has been omitted, while up-to-date figures and the record of new developments have replaced what had become obsolete. The thirteen chapters in the new edition again deal with (i) Economic Function of Rail Transport; (ii) Internal Organisation; (iii) British Railway Finance. Capital: Revenue: Expenditure; (iv) The Railways and the Trader; (v) The Railway Clearing House; (vi) The Theory of Rates and Fares, and their Application; (vii) The Economics of Passenger Train Operation; (viii) The Economics of Freight Train Operation; (ix) Traffic Control and Marshalling Yards; (x) The Economics of Electric Traction; (xi) Railway Statistics; (xii) Road Competition; (xiii) State Ownership. The second edition contains three new appendices in addition to the schedule of standard charges for merchandise traffic which appeared in the first edition. Appendix 2 in new edition includes the proportions of traffic carried at standard and lower charges in two selected years, and a specimen list of typical applications of agreed charges. In Appendix 3 are given the latest and the previous rebates allowed under the Railway Freight Rebates scheme, and the fourth appendix contains a list of associated omnibus companies. There are also new folding plates showing organisation charts on the L.N.E.R., L.M.S.R., and Southern Railway.

The care with which Mr. Sherrington has carried out his revision is indicated in the list of important developments which have occurred since the publication of the first edition and find a place in the new one. Among these may be mentioned the granting of road powers to railway companies in 1928, the inauguration of the freight rebates scheme in 1929, the Road Traffic Act of 1930, the Road and Rail Traffic Act of 1933, the London Passenger Transport Act of 1933, the drastic reduction in railway rating assessments, electrification developments on the Southern, the completion of Whitemoor marshalling yard, and diesel developments abroad. The book must have been ready for press before the recent sanction of increased charges had been given, and there is no mention of the change to direct Government operation on the New Zealand Railways.

Ready Reckoner of Revised Railway Rates. Birmingham, 1937: The Railway & Shipping Publishing Co. Ltd., 12, Cherry Street. 10 pages. Paper covers. Price 2s.—The publication of this ready reckoner is most opportune in view of the increases in railway rates which came into force last Friday (October 1). The old and new exceptional rates by goods train, ranging from 10d. to 260s. a ton, are set out side by side in tabular form so that a trader can tell at a glance what he has to pay under the new scales. On the front page is printed a table showing the amount of the increases on previous charges, ranging from 10d. to 99s. 2d., which are applicable to exceptional rates published in the railway rates books for the carriage by merchandise train or passenger train or other similar service.

Descriptive Diagrams of the Locomotive. Seventh edition (revised), September, 1937. By A. F. Hunt. Shrewsbury: Wilding & Son Ltd., 33, Castle Street. 8½ in. × 5½ in. 54 pp. Price 1s. 6d.—The seventh edition of this excellent booklet comes at a time when, more than ever before, efficient methods are needed in the handling of locomotives. Mr. Hunt, a Great Western Railway driver at Oswestry shed, has produced a most valuable supplement to his instructional lectures in the Federation of Enginemen's Mutual Improvement Classes. Lucidly, accompanied by clear descriptive sketches, he deals with superheating, brakes, firing, injectors, valves and valve gears, and other points of interest and importance to footplate crews. His sound practical advice is throughout reinforced by sufficient theory to make each point fully understood. The author considers that there is "no better service than assisting others," and so fine an outlook is amply confirmed in his book. Naturally, as a Great Western man, he deals exclusively with Swindon locomotives and their accessories, but although the details may differ, the main principles found in G.W.R. practice are similarly applied elsewhere in this country today, and the book has an added value on that account. Although primarily intended for enginemen, the book has proved of no little value to all those, technical or otherwise, who are interested in the practical working of locomotives. In every respect it is one of the best eighteenpennyworths we have yet seen.

London Transport, Underground Railways Timetable.—A new feature of the third edition of the Underground timetable now on sale is the inclusion of a number of humorous illustrations—the work of Mr. A. R. Thomson—in the official information section. There is also an article on the interesting survivals of river shore industry and glimpses of old village survivals, beauty spots, and other interesting places within the board's area. This timetable, giving details of the winter train service, which is current from September 27 to January 30 next, contains a geographically-accurate map of the railway system, and quick reference to 290 stations and first and last trains on all lines.

West Riding Limited.—Coincident with the placing of the West Riding Limited streamlined express in service, the L.N.E.R. has issued a booklet setting forth the facilities and amenities of this latest addition to its fleet of high-speed trains. Marlborough and Garter blue and dark red—the colours of the train—are a prominent feature of this publication, being placed in bands at the top and bottom of each page, while the two shades of blue are also employed for the printed matter. A surprising amount of useful information has been packed into the twelve pages, making the booklet an excellent little reference work to the particular subject with which it deals. Included are tables of point-to-point mileages, and scheduled running times and speeds, a route diagram, seat plan of the train, supplementary seat charges (which, of course, automatically include seat reservation fees), restaurant tariff, train attendant service, a description of the interior and exterior equipment and design of the coaches, and the dimensions of the locomotives used on the service.

Beclawat Silent Window Channel.—We have received from Beckett, Laycock & Watkinson Limited, of Acton Lane, Harlesden, N.W.10, a copy of the new section book of the ingeniously-named and well-known Beclawat silent window channel. This section book is produced for the convenience of designers, drawing offices, and purchasing departments, and contains full dimensions, weights, and finishes of channels, &c., to suit every kind of glass from $\frac{1}{16}$ in. upwards, available for all forms of transport.

THE SCRAP HEAP

The L.M.S.R. announces the placing of over 1,000 fish in the Shropshire Union Canal at Egg Bridge near Christleton, and in the Chester to Ellesmere Port length. This latest re-stocking will bring the total number of fish introduced into the canal, for the benefit of anglers, during the last four years to no fewer than 36,000.

* * *

Among the many railway cartoons in the G.W.R. collection is one by "J.M.S." of the *Western Mail* entitled "Breaking the Record." It depicts King George V, when Prince of Wales, driving a G.W.R. locomotive on the famous trip to Plymouth on the occasion of the Prince's Cornish tour in 1903. The quotation beneath the picture is from the 2nd Book of Kings, Chapter 9: "The driving is like the driving of Jehu, the son of Nimshi, for he driveth furiously."

* * *

The Hon. Dr. K. N. Katju, Minister for Justice and Industries, United Provinces, inspected the local jail at Unao recently with a view to finding accommodation for a few out of 300 prisoners of Cawnpore, who are to be shifted to other jails owing to lack of accommodation in Cawnpore Jail. On alighting from the train, the Minister was delayed at the railway gate by the gateman refusing to unlock the gate until a train that was expected had passed. When informed that he was delaying the Minister of Justice, the gateman retorted, "rules are, after all, rules; and for the Minister they are self-imposed." The gateman, however, changed his mind on receipt of a confidential message from the station-master.—*From the "Madras Mail."*

* * *

Fifty years ago the *Canadian Gazette* recorded that the Canadian Pacific Railway was fast becoming a fashionable route to the East. It added "the Siamese Princes and the new Governor of Hong Kong are now journeying to Asia by way of Canada; and among other recent travellers by the route is the British Minister in Japan, who arrived in London last week from Tokio."

* * *

We stopped at Lydda, where St. George, who presides over the destiny of England, Portugal, and Aragon, was buried after his martyrdom in the year 303. Then one half of the train went on to Jaffa and the other half went for a little while to the south before, turning eastward, it climbed into the mountains of Judæa. The train climbs so slowly that Arab boys run beside it, holding bunches of red anemones, which they offer to the passengers. The mountains are scorched and brown. The roads are white ribbons that slip in and out of the hills. Camels, absurdly large, draw diminutive ploughs sullenly and, it seems, reluctantly, over the meagre fields. Families who might be on a journey from Deuteronomy to the Book of Kings, walk behind laden donkeys; here and there a fine old patriarch, who reminds one of Abraham, leans on his staff to watch the daily train go past, as it climbs and winds into the hills towards the mountain capital of Jerusalem.—*From "In the Steps of the Master," by H. V. Morton.*

* * *

RAILWAY AWARDED DAMAGES IN LEVEL CROSSING COLLISION CASE

In Georgia, U.S.A., it was recently proved that a lorry was driven on to a level crossing and against a slowly-moving locomotive despite whistle, bell, and onlookers' warnings. The locomotive was derailed and capsized and the driver was killed. Different juries awarded the driver's widow $12,000, and the railway $500 damages against the lorry driver. It is possible that the verdict in the latter case may have far-reaching effects not only in America, but elsewhere, and should serve as a warning to road vehicle drivers.

* * *

If you ever rose at dawn to catch a train—and found it an hour late—you might appreciate a new Chicago & North Western service, inaugurated in Sterling, Illinois. Patrons desiring to travel on the 6:17 may telephone to the Sterling station agent the night before, and be assured they will be called just an hour before the train arrives—whether late or on schedule. Officials of the road say the plan may be put into effect in other cities.—*From the New York "Herald Tribune."*

One Hundred Years Ago

Extracts from the October, 1837, issue of "The Railway Magazine" (afterwards "Herapath's Railway Journal") and the oldest constituent of THE RAILWAY GAZETTE

Railways Passed in the Session of 1837.—In January it was shown that notices were given of 118 intended applications to Parliament for Railway Bills in the late session; and, by a subsequent statement, it appeared that 79 of these Bills were actually introduced into the House of Commons; 42 of them only were passed, 34 having been either withdrawn, or lost at various stages in that House, and 3 in the House of Lords. Of the 42 Bills passed, 14 only are for new lines; 5 for the extension of, or for the formation of branches to lines already authorised to be made; 10 for deviations and alterations of lines in progress; 6 for the amendment or enlargement of the powers of former Acts; 5 to enable companies to raise additional sums of money; 1 for the incorporation of an existing company; and 1 for extending the time for completing the undertaking. The aggregate length of the 14 new lines and their branches is 471 miles, 2 chains, 12 yards, and the estimated cost of formation, £6,861,285, or £14,566 per mile.

Bolton and Preston Railway.—On application, a certificate was lately granted by the magistrates to enable the company to take, *nolens volens*, land needful for the line.

Railway Iron.—Mr. Mushet proposed a plan to improve the texture of iron, which was to "puddle" the pig-iron; then, instead of "running it fine," to "ferment" it with adding a small portion of fresh ore.

Mammalia. — The remains of Mammalia have been found on the plains of Cheshire. In the progress of cutting for the Grand Junction Railway, two grinders of the elephant were discovered in a bed of gravel replete with marine shells.—*Times.*

Neapolitan Railroad.—The King of Naples has given M. A. G. Bayard de la Vingtrie his Royal sanction for the construction of a railroad from Naples to Nocera, with a side branch to Castellamare, with the additional privilege of extending the line to Salerno and Avellino, and forming several side branches to other places, on condition of the works being begun within the space of five years. The railroad is to commence in the market-place of Naples, to proceed towards the plain of Portici, by the harbour of Granatello, and thence, between the shore and Resina, to Torre del Greco and Torre dell' Annunziata. At the latter place it will branch off in two directions—one along the seashore to Castellamare, the other through the gates of Pompeii to Nocera, leaving Angri on one side, but passing through Pagani. The length of the whole road will be about 24 *miglie*. A calculation, based upon the present number of passengers and goods, and a much lower price than that now usually paid, is said to leave a profit of nine per cent. to the company.

Railroad in Holland.—Amsterdam, September 7.—The King, by his decision of the 4th of this month, has confirmed the statutes of the Dutch Iron Railroad Company, and consequently that company may be considered as constituted. Our fellow-citizens know that the work of preparing the ground is already proceeding with activity, and from the great number of workmen employed, we may expect that important work will be speedily carried into effect.—*Globe.*

OVERSEAS RAILWAY AFFAIRS

(From our special correspondents)

NIGERIA

Averted General Railway Strike

There seems little doubt that a general strike on the Government Railway has lately been averted by the adroit handling of the position by the Hon. J. H. McEwen, General Manager. For some little time there had been widespread dissatisfaction among the staff throughout the colony and of all departments. At the critical moment, however, Mr. McEwen invited representatives of the employees to meet him and discuss the whole question, with the result that moderation and common sense prevailed and improvements in the conditions of service of the men were granted.

Mr. Peter Jones, representing the station staff and principal spokesman of the railwaymen, placed their case before the General Manager in reasoned but respectful terms, while the tactful courtesy, but firmness shown by Mr. McEwen where demands were unreasonable, engendered a spirit of mutual candour such that agreement was reached satisfactorily to all. A revision of salaries of the daily-paid staff had been under consideration prior to the unrest and this fact undoubtedly made settlement easier. All parties are to be congratulated upon the happy solution of the problem.

INDIA

New Railway Hotel

H.E.H. The Nizam's State Railway has under construction a first class hotel at Aurangabad, a mile away from the railway station. It is expected that the hotel will be ready to receive tourist-visitors during the coming winter. The hotel will be equipped with all up-to-date requirements for the comfort and convenience of visitors, including the provision of every amenity. Visitors to the ancient Budhist caves and temples at Ellora and Ajanta, located at some distance from the railway, have long felt the want of a good hotel in the neighbourhood, and the opening of the new building is likely to attract tourists to these places of interest in increasing numbers.

Cochin Harbour Developments

As a result of consultations that have been proceeding between the harbour and railway authorities, a revised plan has been prepared for the layout of the railway yard for goods and passenger facilities on Willingdon Island. Land is being acquired for the diversion of the main line from Idapalli (the next station to Ernakulam) through Ernakulam town and onwards, over the new bridge linking the mainland with Willingdon Island. Work on the new diversion is expected to begin shortly. The commercial importance of Cochin has been greatly increased by the harbour development works, and the South Indian Railway administration has considered it desirable to introduce an additional express train service between Madras and Cochin as from October 1.

South Indian Railway Developments

As a result of careful investigations, the South Indian Railway has already introduced 34 halts as an offset to road competition, a policy that has greatly benefited railway passengers by reducing the distance to the nearest railway station.

This railway has also modified the rule under which unbooked luggage detected *en route* as exceeding the free allowance is liable to full charge, forfeiting the free allowance altogether; a passenger is now given the benefit of the free allowance if his unbooked luggage is within 25 per cent. of the prescribed weight allowed free on his ticket.

Since August 1, 1937, second and third class season tickets available yearly and half-yearly are being issued by the South Indian Railway as an experimental measure at the following reduced fares:—

Second class: (1) Yearly tickets at 6 times the monthly fare.
(2) Half-yearly tickets at 3½ times the monthly fare.

Third class: (1) Yearly tickets at 7 times the monthly fare.
(2) Half-yearly tickets at 4 times the monthly fare.

Bridge Renewal

The girders of the Palar bridge, 13 spans each of 150 ft., situated between Vellore Town and Katpadi stations on the South Indian Railway, have been programmed for renewal. The work of regirdering began in September.

Improved Metre Gauge Third Class Stock

Twenty-two third class metre gauge coaches of an improved design have recently been put into service on the South Indian Railway. Their bodies were built at the Golden Rock workshops from Malabar timber, on underframes constructed by the East Indian Railway from steel supplied by the Tata Iron & Steel Company.

Each coach is divided into four compartments, accommodating 16 passengers, and there are two 8-passenger sections in each compartment. The sections have two lower and two upper berths. As the new coaches accommodate only 64 passengers, they provide considerable additional space as compared with the previous type, which seated 77 passengers. A special feature is the provision of 8 ventilators on each side, that can be turned to suit the direction in which the train is moving. Window shutters are of the louvre type and allow proper ventilation, even when shut. The ladies compartment is provided with a mirror and all the windows have been fitted with safety bars. Special attention has been given to the lighting arrangements. Four more similar coaches are under construction. This new type of coach is expected to prove extremely convenient for marriage parties.

BRAZIL

Viação Cearense

The last instalment on the purchase of eight Mikado locomotives from the Berliner Maschinenbau A.G. (Schwartzkopf), Germany, was paid by this railway on June 25, notwithstanding that according to the contract signed on September 23, 1935, payment by 36 monthly instalments from date of delivery was agreed upon, making the last payment due on September 20, 1939. The price of these locomotives in local currency fell from 3,681 to 3,262 contos of reis due to depreciation of the *verrechnungsmarck*, and a further economy, due to reduction of interest charges brought the final price down to 3,109 contos. The prompt payment of this amount has been facilitated by exceptionally good receipts on the railway, which has now received authorisation from the Minister of Transport to invite tenders for 10 passenger coaches.

Sorocabana Railway

A satisfactory year's working was registered by this railway for 1936. Receipts touched the record total of 121,870 contos of reis, and although expenses increased to 92,695 contos, the record surplus of 27,347 contos—which does not include the railway's contribution to the Staff Pension Fund—was obtained. Expenses had been fixed at 87,282 contos, plus a later grant of 2,250 contos for wage improvements, based on estimated receipts amounting to 115,000 contos, but once these were substantially exceeded, expenses increased likewise. Heavier traffic was chiefly responsible for higher working expenses, but increased wages, the depreciation of local currency, and the higher cost of firewood and sleepers also contributed. Passengers carried totalled 5,987,816, an increase of 10·46 per cent. on the previous year, and goods amounted to 2,482,476 tons, or an increase of 18 per cent.

The road motor services run by the railway had a successful year, joint road and rail transport yielding 6,159 contos, of which 2,564 contos were allocated to the railway. After deducting expenses amounting to 1,916 contos from the remainder, the Road Department showed a surplus of 1,679 contos, which, when added to previous balances gives the total balance of 4,075 contos.

The Mayrink-Santos line was nearing completion, and by the end of the year

only 18 km. of formation and a few culverts were unfinished, whereas 166,554 km. and 31 tunnels had been completed at a cost of 273,858 contos.

A general stock-taking and valuation was begun in April, and 10,303 units of rolling-stock and workshop material, 70 km. of permanent way, 114 km. of telegraph lines, and 114 km. of fencing had been catalogued up to the end of the year.

UNITED STATES

Train Limit Bill Passed by Senate

Bill S.69 limiting the length of freight trains to 70 vehicles was passed by the Senate on July 26, in spite of the contention of the Association of American Railroads that it would cost the various systems some $90,000,000 a year on the basis of 1936 traffics. Two amendments to the original draft were adopted, namely, the postponement of the effective date of the Bill from July 1 this year to July 1 next year, and a wider provision for exemptions in cases of emergency due to breakdowns. The Bill was sponsored on behalf of the employees as a safety measure for the benefit of the railroads, but the opposition dubbed it as "a device for spreading employment on the railroads" and a prospective burden on the taxpayer.

New Safety Legislation

On August 26, President Roosevelt signed the new Signal Inspection Bill, which had passed the Senate shortly before that date. It is an amending Act to the Interstate Commerce Act of a few years ago, and has apparently been introduced to insure a closer control over signal equipment and operating methods to be vested in the Interstate Commerce Commission. It applies to main line railways only; interurban and tramway systems are excluded. The commission now has power to order the adoption of such signalling and safety devices as it sees fit on such sections of line as it judges necessary, and existing apparatus may not be materially modified without its approval. Each railway must deposit with the commission copies of its rules, instructions and standards and they will then have the force of law. Should a railway fail to do this the commission can impose its own rules.

That body is also empowered to appoint inspectors, who will be Civil Servants, to be selected competitively, to inspect equipment and working methods from time to time. Such persons shall not have any material interest, even indirectly, in any patents, or in a railway or a manufacturing concern. Failures of equipment, and especially accidents arising therefrom, must in future be reported to the commission. This legislation will have the effect of making the Government inspection of railway working stricter than before, and approximates to the conditions obtaining in some other countries.

NEW SOUTH WALES

Extension of Telephone Traffic Control

The first telephone traffic control office on the southern main line was opened on July 13 at Goulburn, making a total of about 600 miles of route controlled in this way on the Government Railways. The Goulburn control office deals with the traffic in the districts between there and Cootamundra, Bombala, and Crookwell, Queanbeyan and Canberra, Roslyn and Taralga, Yass, Galong, Burrowa, and Demondrille to Koorawatha. It is open continuously, being manned in 6-hr. shifts. Power is obtained from the municipal a.c. supply, transformed or rectified for the various functions. There is also a telegraph room and telephone exchange. Much of the equipment was made by the Signal and Telegraph Department and comes under its supervision.

GERMANY

Transit Traffic in the Polish Corridor

On September 6, negotiations were begun between the Reichsbahn and the Polish State Railways, conducted by Messrs. Holtz and Ceceniowski respectively, for a new agreement on the transit traffic between Germany and East Prussia, to replace that now in force and due to expire on December 31. Restrictions on this traffic had to be introduced in 1936 owing to currency and exchange difficulties, and for a time much of it was diverted to the sea route to Königsberg. Later the railway service was largely resumed, transit traffic being kept to the shortest routes on Polish territory.

The "Verein" Makes its Awards

At regular intervals the Central European Railway Association, or the *Verein* as it is called on the Continent for short, awards a number of prizes for meritorious inventions, special engineering work, or the writing of technical works of outstanding value to railway science. In August those for the last three years were announced, and as there are 17 in all, they cover a considerable range of subjects. The highest award of 3,000 RM. goes to Dr. Pirath of Stuttgart for his investigations into transport economics; the others vary in value from 1,500 to 2,000 RM.

Among the most interesting is one to the Dutch signal engineer Bouman for improvements to interlocking mechanism for power frames, and another to Herr Gansler, of Mannheim, for the claw type point lock now being adopted by the Reichsbahn. The design of the Flying Hamburger railcar is honoured by an award jointly to Herren Fuchs, Brener and Dähnick, while Dr. Wagner receives one for his work in developing the high speed steam locomotive, and Herren Hildebrand and Möller one jointly for improvements to driver's brake valves.

Another award goes to Herr Culemeyer for the carrier vehicle for conveying railway wagons through the streets. Others concern diesel tractors, the measurement of the movements of vehicles in motion, railway statistical work, locomotive smoke boxes, station layouts and working, wear of tyres and other matters of interest. The total value of the awards is 30,000 RM.

GREECE

The State Railways in 1935-36

The length of line operated by the Hellenic State Railways totals 1,264 route-kilometres of standard gauge, and comprises the Piræus–Athens–Larissa–Salonica, the Salonica–Alexandroupolis, Salonica–Guevgueli main lines, and branch lines to Chalcis, Stylis, and Florina. The rolling stock consists of 218 locomotives, 215 carriages and 87 open excursion cars, 81 luggage vans, 17 mail vans (of which 11 belong to the Ministry of Communications), and 4,213 goods wagons. Working results, according to the Report on Economic and Commercial Conditions in Greece issued by the Department of Overseas Trade in April, 1937, were as follow :—

	1935–36 Drachmæ	1934–35 Drachmæ
Gross receipts ...	365,393,535 (£664,352)	326,114,238 (£592,935)
Expenditure ...	339,663,000 (£617,569)	299,111,000 (£543,838)
Operating ratio, per cent. ...	92·96	91·69

The increase in expenditure is attributed principally to improvements in the permanent way, building of new and repairs to existing bridges, station improvements, &c. Practically the whole of the line between Athens and Salonica has been renewed during the past few years; wooden sleepers have been replaced by steel and a number of curves straightened out, with the result that the journey between the two cities has been speeded up by some 3–4 hr.

Other working statistics were as follow :—

	1935–36	1934–35
Passengers, number	4,323,307	3,431,570
Goods, tons ...	1,241,109	1,234,476
Train-kilometres ...	3,743,650	3,267,324
Number of staff ...	6,534	5,860

Road competition is being increasingly felt, and a Ministry of Railways and Road Transport has been created to deal with the many problems arising. Feeder services by railway omnibuses to distant towns and villages, with through bookings and reduced fares, are among the measures already in force. It is also proposed to make certain road services subsidiary to the railways, and to institute a kilometric road tax to be passed on to the railways, while licences will not be renewed as they lapse. Given continuity of policy under the new Ministry, these measures should prove effective.

WEED-KILLING ON RAILWAYS WITH DUSTING POWDER

In places which cannot be reached by the sprays of the weed-killing trains, a most effective and convenient form of weed-killer is Atlacide (Railway) Dusting Powder, by reason of its requiring no water

CHEMICAL weed-killing on the permanent way requires the use of a considerable quantity of water, and for this purpose some of the British main lines and railways elsewhere are now using special trains of tank wagons or old tenders fitted with spraying plant, such as those described in THE RAILWAY GAZETTE of July 23 and August 20 last, on the Southern and the Great Western systems. There are, however, on railway premises many places where it is necessary to eradicate weeds which cannot be reached by the sprays of such trains, and where —due to distance from a station or for other reasons— water is difficult to obtain. Chief among these, with increasing electrification, are the cable lines and sub-station enclosures, but goods yards, platforms, sidings, and around signals and ground frames may also be mentioned.

To keep such places clear of weeds the Chipman Chemical Co. Ltd. has developed a highly concentrated form of Atlacide weed-killer, which is supplied in powder form packed in suitable tins, under the name of Railway Powder. This material is simply sprinkled on the weed growth through the perforated tins in which it is packed, and, being hygroscopic, the material, once exposed to the air, quickly dissolves without the use of water.

Application of weed-killing powder

The ease with which this material can be handled and carried out by the gangs from the stations when going to work or when using a trolley, permits of the weed killing being effected much more rapidly than by hand methods. A thoroughly practical harness of the Army equipment webbing type, as illustrated, is supplied to facilitate the use of the powder by permanent way men. Another advantage, is that this form of chemical weedkiller can be used straight away by the most inexperienced person, without difficulty, and it is rapidly becoming the practice of many main line railways to supply each stationmaster with a quantity of the duster tins, according to his requirements, and in this way platforms and grounds are kept clear of weeds by porters or other station staff in spare moments. Atlacide Railway Powder being non-poisonous, can be used in the country with absolute safety and without fear of harm to cattle or water courses; it is also normally non-inflammable.

To the fact that it is extremely effective we can testify from personal experience. The lightest dusting is sufficient to seal the fate of the hardiest weed, which after a fortnight is completely destroyed right to the roots. From the illustration of a section of the cable lines on the London—Brighton main line, it is also obvious that this powder does its work thoroughly. Among other uses to which it may be put is to clear fire borders along railway boundaries and fences; two men each with a dozen tins should be able to treat a strip equivalent to a fire trench 18 in. wide and a mile long in an hour; they should also be able to free a mile of cable line in a couple of hours each using two dozen tins.

Weeds cleared from the neighbourhood of cables on an electrified section of the Southern Railway

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THE LARGEST INGOT.—The English Steel Corporation Limited, which in 1932 produced at the Vickers works the largest ingot (175 tons) that had ever been made in this country, has now gone a step further and produced a steel ingot of 230 tons in weight, approximately 25 ft. long by 10 ft. across corners. This was made in a chilled mould—no mean task when it is realised that it necessitated the use of four acid open-hearth furnaces which had to be worked to bring the bath of the furnace in every case to the desired condition at a definite time so that pouring, which was done through the first ladle, was uninterrupted. The ingot, we understand, will be made into large forgings in connection with the Government Defence Programme.

RATIONALISATION ON THE SWISS FEDERAL RAILWAYS

A record of steadily falling operating costs and improving service since 1920

THE following information, taken from a report issued last April, describes the progress made towards rationalisation on the Swiss Federal Railways since 1920. The task was facilitated by legislation passed in 1923, superseding that of 1897, which had hitherto governed the working of the Swiss Federal lines. In recent years receipts have fallen to a greater extent than working costs, the former diminishing by fr. 113 million in 6 years, the latter by only fr. 52·5 million.

Motor competition is very free in Switzerland, and a general co-ordination of transport facilities is still only an ideal. The management has sought to improve its position not by raising rates, but by offering better service to the public and introducing the latest improvements in working methods. Nevertheless, the world slump has been a factor that no degree of real efficiency could outweigh. The following table is of interest in this connection:—

	1913	1920	1925	1930	1935	1936	Fall % 1930–1936
Passengers (millions)	91·6	86·1	101·9	127·9	109·9	106·9	16·4
Passenger-km. (millions)	2,302	2,002	2,381	3,029	2,707	2,642	12·8
Freight, tonnes (millions)	14·6	15·8	16·4	18·5	14·2	12·8	30·8
Tonne-km. (millions)	1,378	1,265	1,781	2,066	1,707	1,435	30·5

In the period 1930-36 passenger receipts fell by 24·5 per cent., and freight receipts 31·4 per cent.; receipts per km. fell by 13·3 and 1·2 per cent. respectively.

Reforms have been both administrative and technical. The permanent Advisory Committee of Management has been abolished and the Board and General Management are in direct association. Board members have been reduced from 55 to 15. The 5 Divisional Managements, a legacy from the old private railway systems, have been reduced to 3, as have the sections of the central administration, with corresponding internal redistribution of staff duties, effecting a large monetary saving. These measures, with the staff reductions on the line due to the introduction of up-to-date equipment, have led to a fall of 11,034 in the number of employees between 1920 and 1936.

Wage charges fell by fr. 78·3 million, but additional costs for social charges and other items came to fr. 17·9 million, an increase of fr. 60·4 million per annum. Some fr. 600 million have been saved since 1920, but the question is complicated by additional considerations.

Various classes of work such as printing, stores, accountancy, &c., have been centralised, and local offices closed; station working also has been simplified. Revision of freight train timings, and the use of tractors for shunting, have resulted in the closing of certain rolling stock depots, and a better utilisation of train crews and equipment. Purchase of materials has been placed on a new basis, and permanent way maintenance completely reorganised, many engineers' districts having been combined and staff reduced. The principal workshops have been reduced in number from 9 to 6—the abolition of another is in view—and their management simplified. Repair work is now distributed to them in classes, locomotives to one, carriages to another, &c.; and the time between overhauls has been lengthened. Mechanised accounting-equipment and the latest office machinery have been installed.

From 1924 to 1932 fr. 5,770,100 were spent on improved signalling effecting a total annual saving of fr. 357,800, while the practice of switching out sections at night has been considerably extended. Roads maintained by the railways have been re-surfaced to reduce upkeep. Automatic warning signals, or long distance barrier working, have been introduced at many level crossings. Some 128 bridges have been built to replace crossings, at a cost of fr. 45 million, fr. 22·6 million being compensated by savings, the rest coming from State or Cantonal funds. Pre-heating of trains, enabling locomotive time to be reduced, has effected a saving of fr. 1,036,000 per annum, and fixed installations for charging trains with air and regulating and testing brakes without a locomotive, fr. 130,000 per annum more.

The introduction of the Drolshammer brake on freight trains at a cost of fr. 15,000,000, has realised an annual saving of fr. 1,400,000, due mainly to a large reduction in brakesmen. Mechanical and chemical weed killing has saved another fr. 250,000; and jet cleaning of rolling stock, fr. 225,000. Conveyor band assembly methods have been introduced into the workshops, and automatic sub-station control has been extended.

The greatest work undertaken, however, has been the extension of electrification. Of 2,865 km. (1,780 miles) of line, 2,099 km. (1,304 miles), or 73·2 per cent., are electrically equipped; in 1936, 85 per cent. of the train-mileage was electrically operated. One of the principal objects of this scheme has been to free the country from dependence on foreign fuel, and its advantages have been specially felt since the devaluation of the Swiss franc: actually an annual operating saving of fr. 10·6 million is being obtained. At the end of 1936 fr. 774 million had been spent on electrification, excluding costs charged to operating account and capital losses occasioned by abandoned equipment, such as steam locomotives. Of this sum line equipment took fr. 219 million, locomotives and transmission lines fr. 299 million, and power houses and workshops fr. 256 million. Although interest and depreciation charges are necessarily heavy, the change has been justified, and the improvement in the working from the public point of view is undeniable. It has undoubtedly prevented loss of traffic and attracted new, though it is difficult to estimate exactly how much.

The reduction of stores balances of all kinds has been energetically pursued, and, whereas the value of stores in hand was fr. 40·1 million in 1930, it had fallen to 23·7 million in 1936. The reduction in stores kept at local depots has produced the largest saving.

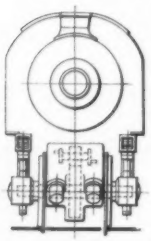
The undertaking has had to face numerous heavy charges, some of which go back many years to the time when the private systems were acquired. Others, again, were due to the dislocation of traffic and other adverse effects of the war, but in the last 15 years a steady improvement has been effected, and in 1935 it became no longer necessary to resort to further loans to cover constructional costs. The total cost of conducting the undertaking has been markedly reduced, and with it the cost per train-kilometre, which fell from fr. 19·5 in 1920 to fr. 8·81 in 1936. Gross receipts from all sources in 1936 were fr. 312,500,000, and total expenses, including depreciation and interest charges, were fr. 379,717,000, leaving a deficit of fr. 67,217,000. The management is continuing its efforts towards the elimination of all expenditure that is incompatible with the provision of a service such as the public has a right to expect.

A SIXTEEN-CYLINDER LOCOMOTIVE

Designed by the Baltimore & Ohio Railroad for hauling heavy passenger trains at 100 m.p.h.

THE Baltimore & Ohio Railroad has just completed a design for a powerful new locomotive having 16 cylinders arranged for constant-torque propulsion, and for producing a continuous flow of power similar to that of a multi-cylinder motor vehicle, with smooth running and minimum vibration. It is expected that it will develop 5,000 h.p., and be capable of handling fourteen standard Pullman cars at a speed of 100 m.p.h. on straight, level track.

The locomotive, of which a drawing is reproduced herewith, is of the 2-D-2 type. The tender, mounted on two 6-wheel bogies, carries 23 tons of coal and 22,000 gallons of water. Each of the four driven axles will have geared to it a Besler steam motor, having 4 cylinders, so that with the 16 cylinders there will be 32 power impulses for each revolution of the steam motors. No counterbalancing of any kind will be necessary, for external coupling and connecting rods and crank pins will be eliminated. As a result there will be no hammer blow on the track. The absence of the rods and other motion work, will make it possible for the driving wheels with their independently mounted 4-cylinder steam motors, to negotiate sharper curves than engines of conventional design. The gears and all other motion parts of the steam motor will operate continuously in an oil-bath, and oil will be forced by a pump to the wearing parts, as in the modern motorcar. The cut-off position of the valve gear, together with forward and reversing motion, will be automatically regulated from the locomotive cab by means of an electro-pneumatic control.



Cross-section of locomotive

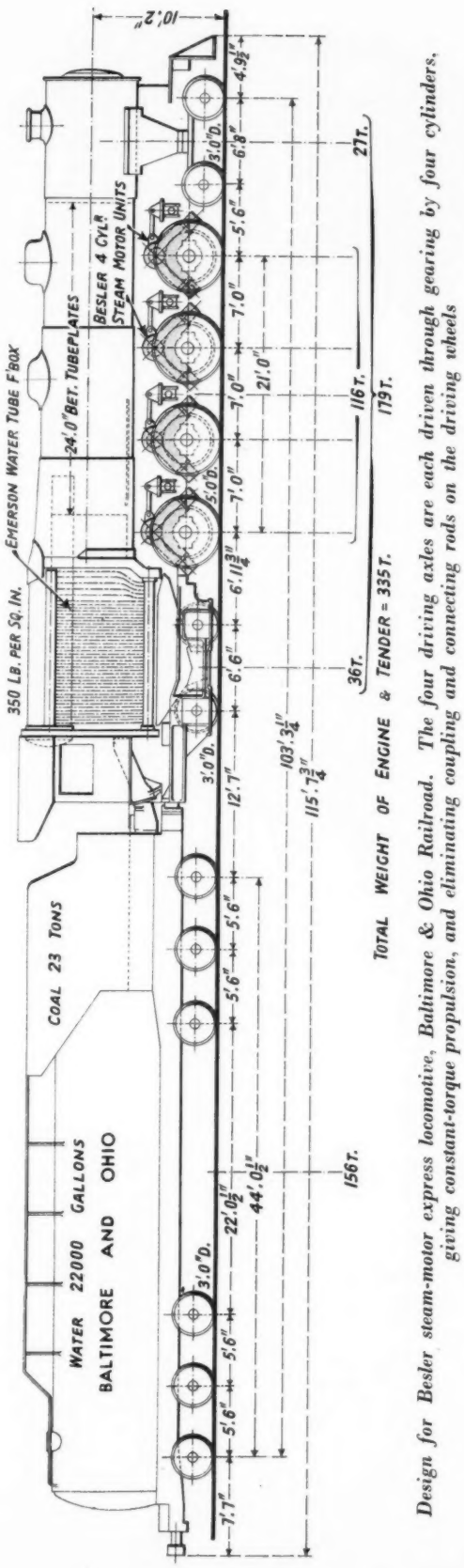
The total weight of the locomotive will be about 179 tons, with 116 tons on the driving wheels, and of the tender 156 tons. The starting tractive effort will be 72,500 lb., giving a factor of adhesion of 3·6, which is more than ample where there is constant torque.

The principal dimensions are:—

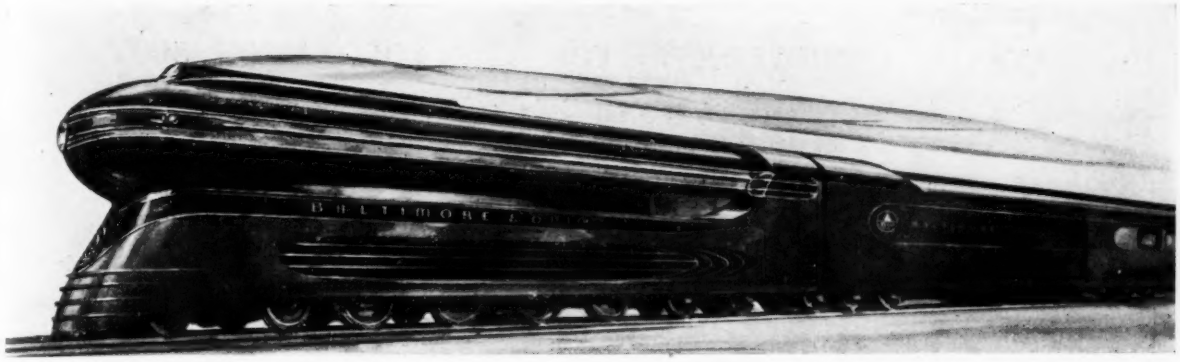
Cylinders, No.	16.
,, diam.	9½ in.
Piston stroke	7 in.
Boiler, heating surfaces—	
Firebox	775 sq. ft.
Tubes and flues	5,025 ,,
Total (evaporative)	5,800 ,,
Superheater	1,530 ,,
Combined total	7,330 ,,
Grate area	80·5 ,,
Boiler pressure	350 lb. per sq. in.

Water-tube Type Boiler

The boiler will be of the Emerson water-tube type with 775 sq. ft. of heating surface in the firebox, and a total heating surface of 5,800 sq. ft. It will have a superheating surface of 1,530 sq. ft., and will be equipped with a feedwater heater. The Besler steam motors operate on a guaranteed rate of 14 lb. per h.p. hr., so that when the locomotive is developing 5,000 h.p., the cylinders will require 70,000 lb. of water per hr., while the boiler will evaporate 80,500 lb. The working pressure of the engine is 350 lb. per sq. in.



Design for Besler steam-motor express locomotive, Baltimore & Ohio Railroad. The four driving axles are each driven through gearing by four cylinders, giving constant-torque propulsion, and eliminating coupling and connecting rods on the driving wheels



Artist's impression of the proposed new Baltimore & Ohio Besler steam-motor locomotive

The new locomotive will be very flexible. It will have outside frames and spring rigging; also outside journal boxes, which will be oil lubricated. Each pair of driving wheels with its attached steam motor can be quickly removed on the drop pit for necessary repairs, such as turning of tyres, adjustment of driving boxes, &c.

Figures relating to the wheelbase and weight distribution of the locomotive appear on the accompanying diagram. The gear ratio of the transmission is 19:55, the total horsepower 5,000, and boiler capacity 115 per cent.

The locomotive will be streamlined on the pattern developed for the B. & O. two years ago by Otto Kuhler, Consulting Engineer of Design, and which has been used in an adapted form for the streamlining of the company's diesel-electric locomotives and its New York train connection motor coaches.

NEW HUMP YARD AT NAIHATI, EASTERN BENGAL RAILWAY

The first hump yard in India to be equipped with rail brakes or retarders which are of the Frölich pattern

ONE of the largest and most important goods marshalling yards on the Eastern Bengal Railway is at Naihati, a station on the main line about 24 miles from Calcutta. The yard contains about 32 running miles of track and is capable of accommodating over 6,500 wagons. About 7,000 trains are annually received, sorted, re-marshalled and despatched, and some 300,000 wagons flow through the yard every year. The inward and outward rail-borne traffic of 39 mills located on the left bank of the River Húghli between Calcutta and Naihati is here collected, sorted and distributed. Naihati is also the marshalling station for goods traffic to and from certain large sections of the railway.

The various phases of operation in the handling of 850 wagons a day by the ordinary method of shunting naturally involve considerable delay and expenditure. In order to facilitate such handling and also as a measure of economy, the railway administration has had under consideration for some time past the introduction of gravity-shunting at Naihati. A small experimental hump yard was first built, and when this proved successful in operation, it was decided to construct a larger and more elaborate gravity yard, and to provide a mechanical braking system with a central control tower for the working of points and retarders. The modern hump yard at Naihati, which has now been in operation for several months, was recently inspected by a party of railwaymen and non-officials.

The points are operated electrically from the control tower, an ingenious device in track-circuiting preventing the movement of points until the track is clear up to a certain distance beyond the points. In the tower the control of the points is effected by a diagrammatic thumb-switch control board, somewhat similar to those at Whitemoor, L.N.E.R., and the retarding or rail-braking equipment is of the Frölich type, this apparatus also closely resembling that at Whitemoor, described in our issue of September 20, 1929. The Naihati retarders are the first to be installed in India, though there are many hump yards throughout that country. It may be remembered that in the Frölich system, the operation of a quadrant lever in the control tower causes the braking rail to rise by hydraulic power and grip the wheels of a wagon as soon as it comes on to the table housing the braking gear.

The hydraulic retarder is not used in the case of wagons in which tyres are fastened to the wheels by rivets or bolts and nuts, as the braking bar would sheer off the bolt- or rivet-heads. The E.B.R. has no wagon of this type but some are occasionally received at Naihati from foreign railways. To check the speed of a wagon of this type, a skid-shoe is placed on one of the rails of the hump line track. The leading wheel impinges on the skid-shoe and drags it along against friction for a certain distance until the speed of the wagon is sufficiently reduced. The shoe is then automatically thrown off at a slip point. If it is necessary to bring the wagon to complete rest, the skid-shoe is placed on a different rail in the track, which is not provided with slip points and, therefore, holds the shoe until the wagon stops.

The construction of the new hump yard has cost about Rs 2 lakhs (£15,000). The facilities provided, however, have greatly simplified shunting operations, and have enabled two whole-time shunting engines to be saved, the operating cost of which alone has justified the outlay; many other valuable advantages and economies have accrued. Under the old system it took well over an hour to sort out a train; the same work can now be done in 10 minutes. The number of wagons dealt with per shunting engine per hour has gone up by 50 per cent. since the introduction of gravity-shunting. Illustrations of the new yard will be found on page 616.

TRACK IMPROVEMENTS FOR THE CORONATION SCOT

A note on the Hallade work undertaken by the London Midland & Scottish Railway in connection with the new high-speed services

By W. M. BOND

IN November last test runs were made from Euston to Glasgow and back, when the journey in each direction was performed in under six hours. As a result of these runs, it was decided to put in hand a comprehensive programme of Hallade work on lengths of track where it was necessary to improve the running or where it was found possible to ease a speed restriction. Furthermore, the test runs showed that in the main a general maximum speed of 90 m.p.h. could be permitted throughout, except, of course, at such curves, junctions and other places as require permanent speed restrictions.

The work undertaken may be divided under three headings:—

(1) General improvements necessary to permit the new high speeds to be travelled in comfort.

(2) Work in connection with the easement or elimination of existing speed restrictions.

(3) Work necessary to avoid the imposition of a speed restriction which otherwise the new maximum would have demanded.

Whilst many of the curves had not previously been dealt with by the Hallade method, one outstanding feature of the work was the necessity for re-Hallading many of those curves which had been dealt with in the past. Five or six years ago, or even less, it was thought that transitions designed for speeds of 65 m.p.h. were all that was necessary, but the test trains showed that such transitions when run over at speeds of 80 and 90 m.p.h. were little better than tangents. This applied equally to transitions from one radius to another within the body of the curve, and whilst many of the curves required little or no increase in cant, a decided change in the versine design was essential. Wherever possible transitions were designed with a minimum length of five half chords.*

The cant deficiency question was naturally given due consideration. Experience and careful tests on the trial runs showed that on a well aligned curve a 3-in. deficiency was neither uncomfortable for passengers nor unduly noticeable, whilst on a poorly aligned curve any deficiency was both uncomfortable and noticeable. Hence, whilst in certain instances a maximum deficiency of up to 3 in. was permitted, such cases were few in number and then only in places where the Coronation Scot would be the only train normally attaining such deficiency.

In the six months available for this work over 269 curves were re-aligned, constituting a total single track mileage of 244 miles. The permanent alignment of these curves was assured by pegs or monuments sunk in the 6-ft. way and their location calculated to $\frac{1}{10}$ in. For this work 17,432 pegs were used. In addition to the plain curves re-aligned, 19 junctions were improved and 14 miles of straight road pegged to a dead straight alignment.

In many instances in connection with the improvement of junctions, "two-level" chairing was introduced, as there is no doubt that the transitioned two-level junction materially assists in obtaining high speeds.† Apart from this major two-levelling work, numerous simple connections to and from the main lines were two-levelled in order that the main line cant might be maintained to its correct amount. Schemes were prepared for Stafford junction and Euxton junction, and whilst it was not possible to complete these in time for the inauguration of the Coronation Scot, it is hoped that they will be undertaken immediately after the termination of the summer services. These schemes will permit the present speed restrictions of 30 and 60 m.p.h. respectively being raised to 60 and 90 m.p.h.

The extent to which this re-alignment work was successfully carried out may in some measure be judged by the extremely smooth riding of the Coronation Scot over the whole of its route. An additional feature is the ease of the run from a traffic point of view. Twenty previously existing speed restrictions have been relieved or abolished, and on twelve lengths where the higher speeds would have necessitated speed restrictions, these have been entirely avoided.

The relief which this engineering work means to the Operating Department can be realised from the fact that experience has shown that the Coronation Scot can and does arrive ahead of time in each direction without having had to reach at any part of the journey the limiting maximum speed laid down.

* The length in feet of the chord referred to is 1·61 times the maximum expected speed in m.p.h.

† This system was fully described in THE RAILWAY GAZETTE of October 2 and October 9, 1936.

Hallade Track Recorder

With the advent of the accelerated services now in operation on most British railways, the charts produced by the Hallade track recorder play an ever increasingly important part in the supervision of track maintenance. From these charts it can be seen where poor running exists, where alignment is at fault, where the cant is incorrect and the packing indifferent. For those who have not actually seen the machine in operation, the accompanying photographs and description will, it is hoped, explain much of the hidden mysteries of this instrument.

Most faults in the track have an influence on the running of the coach at speeds over 30 m.p.h. The shocks or thrusts caused by faults in alignment, packing, cant, &c., are transmitted to the instrument by the coach, and in reality, therefore, it is movement of the coach which the instrument records It registers these movements through the action of free pendulums, and, since different coaches vary in their response to any irregularities of the track, the difference in riding between one coach and another is compensated by a damping system built into the instrument. Even if the instrument were used in one coach exclusively damping could not be abolished.

The action of the Hallade recorder may be understood by reference to the photographs reproduced herewith: A clockwork motor A is controlled by a governor for speed, and drives the main drum B over which the paper and carbons travel. The motor is adjusted so that the speed of the paper feed is exactly 60 mm. per min. C is the paper feed roll, D the carbon feed roll, E the motor speed

control screw. P(1) is a small pendulum with a transverse fulcrum which indicates acceleration, braking, drawbar pull and gradients, and is directly connected to P(2), the pendulum which is responsible for showing rolling. It will be noticed that this pendulum has two equal weights placed at an equal distance from the longitudinal fulcrum and is, therefore, not sensitive to side thrust, but, as the instrument moves with the rolling of the coach, the pendulum continues to lie in one plane as located by P(1). In effect the instrument rolls about the pendulum. There is no damping attached to this pendulum system.

P(3) is the main pendulum with its major weight at the bottom and a counter weight at the top, and it is this pendulum which shows the lateral forces due to poor alignment and irregular or incorrect cant. A pendulum of this nature must, of course, be damped and, as previously mentioned, the necessity for damping varies with different coaches. An adjustable dash pot is therefore provided at F(1) with its control lever at the bottom. The dash pots are air pistons and the lever at the bottom merely opens or closes, at will, the air valve.

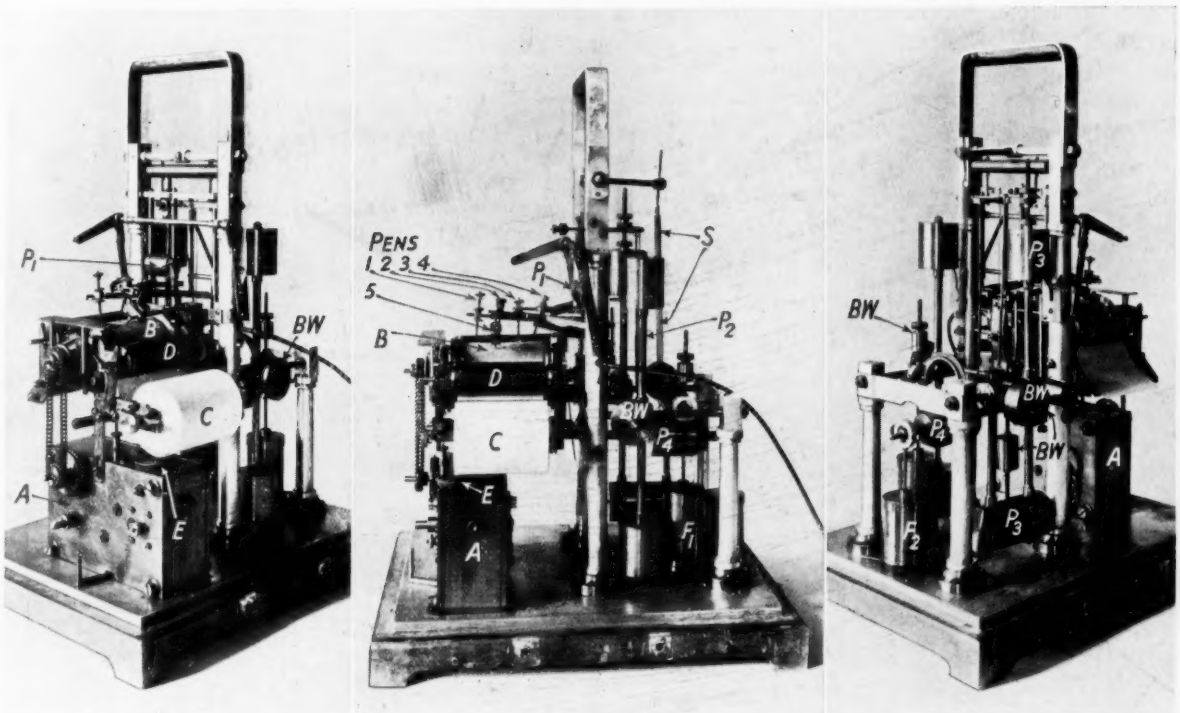
P(4), the last pendulum, is a little difficult to see in the photographs and is different in principle from the others, inasmuch as it lies at rest in a horizontal plane. It is maintained in this position by a long spring shown at S, and it is this pendulum which is responsible for the detection of packing faults, slacks and irregularity of track level. This pendulum has its own dash pot shown at F(2), again controllable by an air valve at the base.

It will be obvious that, in the construction of these pendulums and the parts linking them to the pens, the connecting parts themselves would have a leverage about the several fulcrums which, in turn, themselves would register forces. To cancel out the effect of these necessary working parts, many balance weights are introduced, which, as far as they can be seen in the photographs, have been lettered BW. Experience shows that it is very necessary that these balance weights should be adjusted so as to counteract the effect of the several connections.

The pens (or styluses) are numbered 1 to 5. These pens form the means of producing upon the chart graphs which show precisely the movement of each pendulum in relation to its axis. Pen No. 1, connected to P(4), shows the vertical movement of the coach due to poor joints or slacks and any excessively quick movement in the vertical plane. Pen No. 2 is connected to P(3) and shows the lateral force caused by poor alignment, excess or deficiency of cant. Pen No. 3 is connected to P(1) and P(2) and shows: (*a*) rolling of the coach, (*b*) acceleration, (*c*) braking, (*d*) gradients, and (*e*) drawbar pull. The last two are not shown to a useful scale.

Pen No. 4 is used to indicate mile posts, stations, tunnels, water troughs, &c., and is operated by an observer through the bowden wire shown trailing off to the right of the illustrations. Pen No. 5 is merely to provide a datum line. It is adjusted at the beginning of a journey to suit the set of the particular coach in which the instrument is working, and provides a base line from which to measure the displacement of Pen No. 2.

For an accurate recording of the forces due to inequalities of the track, the instrument is consistently used in a compartment situated directly over the bogies. Experience has shown that, providing the first and last coaches in a train are avoided, a consistent and truly comparative diagram can be produced which will enable the engineer responsible to see precisely what betterment or otherwise has been effected since the previous chart was made over that particular length.



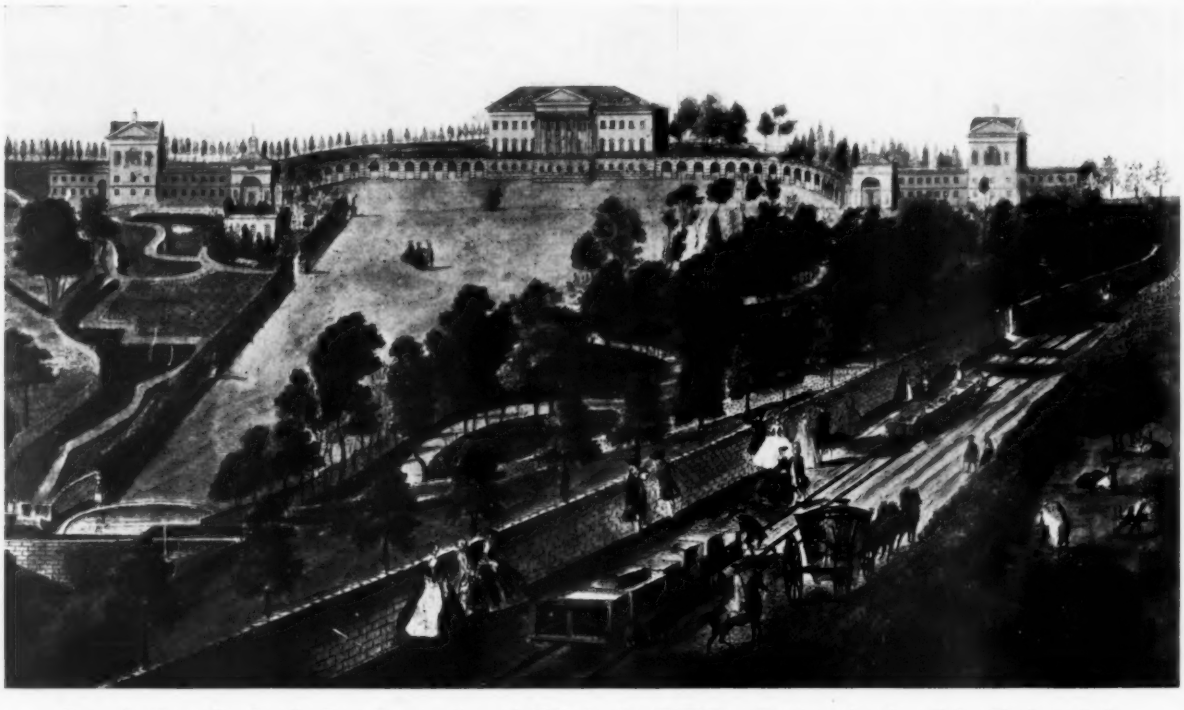
Three views of the Hallade track recorder

RALPH ALLEN'S COMBE DOWN WAGON-WAY, BATH

Some particulars and illustrations of the earliest railway of which a detailed description has survived

By CHARLES E. LEE

THE Great Western Railway Company's collection of pictures contains many fine illustrations depicting the development of rail transport, but the historian would doubtless accord pride of place to the hand-coloured view we reproduce below, for it is one of the earliest railway illustrations and shows the first line of which a detailed description has survived. Ralph Allen, the builder and owner of the railway, was the son of an innkeeper at St. Blaise (near St. Austell) in Cornwall, and was born about 1694. In his early years he assisted his grandmother in the post office at St. Columb and is there stated to have attracted the attention of Sir John Trevelyan, who secured for him a clerkship in the Bath post office. A story which lacks proof credits Allen with having opened letters of persons suspected of conspiring to restore the House of Stuart and so secured the friendship of General Wade. Certainly he married General Wade's natural daughter (referred to in James Tunstall's "Rambles about Bath" as Miss Earl) and through her fortune was able to undertake important works.

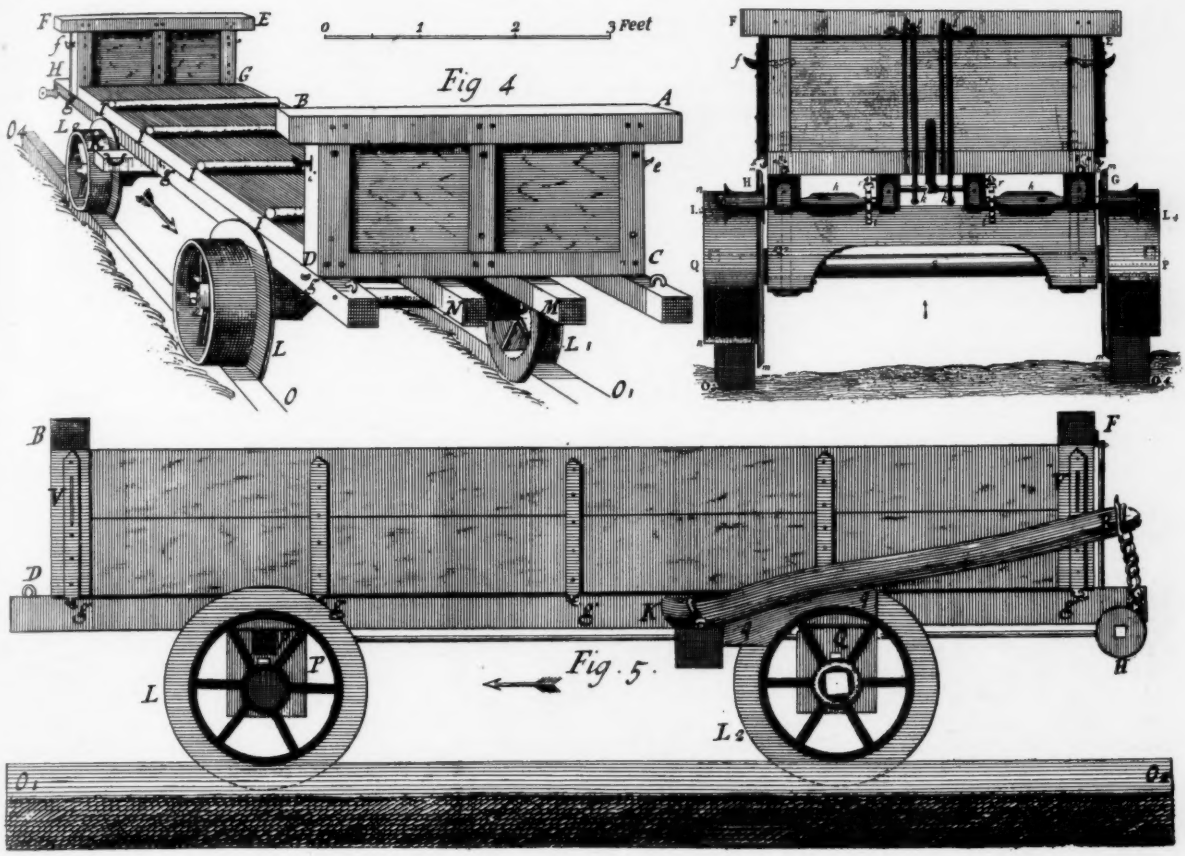


Reproduction of a hand-coloured engraving of 1754 in the G.W.R. collection, showing Prior Park and the Combe Down wagon-way

Allen's success as a contractor for the postal service is outside the subject of these notes, excepting to record that it resulted in gaining for him considerable civic influence at Bath, of which city he became M.P. and Mayor. He then set about fostering local commercial development and "first purchased some quarries, then determined to make a road between the summit of the hill and the river Avon as the gentlemen in the North of England had made between their collieries and the River Tyne, that heavy carriages might be drawn upon it with such little strength as would reduce the transportation of stone to the water side to half the price of carrying it down in common waggons."* John Wood also tells us that "Allen had the good fortune to meet with a person whose natural genius for mechanicks enabled him to improve upon the original [models sent from the north] and to execute the intended road, as well as the carriages to be worked upon it, so as to answer the purpose for which both were designed, whereby block stone came to be delivered at the Avon side for 7s. 6d. a tun of 20 cubical feet, which was 2s. 6d. a tun cheaper than it had been sold for. . . ."

Another writer† gives a name to Allen's engineer in describing Prior Park as follows: "At the bottom of the lawn before the house is a piece of water, and over it a Palladian bridge, built with stone conveyed hither from the large quarries on Combe Down (which likewise furnished stones for the whole house) by curious carts or sledges, invented by Mr. Padmore, a very ingenious artist and mechanick." Prior Park, in Widcombe parish, formerly belonged to the priors of Bath and was noticed by Leland. Collinson in 1791 said that in the park were to be seen vestiges of "that notable antient boundary of

* *A Description of Bath*, by John Wood, 1765, Vol. II, p. 424.
† *History and Antiquities of the County of Somerset*, by the Rev. John Collinson, 1791, vol. I, p. 170.



Details of the wagons used on the Prior Park wagon-way, reproduced from two plates in the 1734 *edition of "A Course in Experimental Philosophy"*

the Belgic kingdom, Wansdike, entering from Wiltshire, and running towards the Severn sea." The neighbourhood was therefore of considerable historical interest long before it became the scene of Ralph Allen's railway enterprise.

In the course of his recently-printed presidential address to the Newcomen Society, Mr. C. F. Dendy Marshall made a short reference to the Ralph Allen wagon-way and stated that it was laid down in 1730. During the subsequent discussion Mr. Kenneth Brown quoted* an indenture made on March 20 of that year between Philip Bennet and Jane, his wife, of the one part and Ralph Allen and Elizabeth, his wife, of the other part, containing the recital: "Whereas the said Ralph Allen hath lately made and cut a certain Waggon-way or road for the carriage of stone from the quarries of him the said Ralph Allen in and through a certain piece or parcel of ground called the Mill Ground late belonging to the said Scarborough Chapman . . ." Mr. Kenneth Brown commented that Allen therefore built his waggon-way very shortly after the Avon had been made navigable by the project authorised by a Statute of 10 Anne, and added that the first barge came up the Avon on December 15, 1727. Allen was one of the proprietors and the Treasurer of the Avon Navigation.†

The evidence in favour of the year 1730 is by no means so conclusive as appears to have been considered by this meeting of the Newcomen Society, as a close examination of the indenture wording reveals. Although this indenture is dated 1730, the full date which it bears is "The twentieth day of March in the fourth year of the reign of our sovereign Lord George the Second . . . one thousand seven hundred and thirty. . . ." Previous to the passage of the Act of 1751 which fixed the beginning of the year as January 1, the legal and civil year in England started on March 25, and therefore the date of this indenture would appear to be what we now reckon as 1731. Moreover, this is supported by the reference to the fourth year of the reign of George II, for he came to the throne on June 11, 1727, and therefore had reigned under three years on March 20, 1730.

Regarding the route taken by the line, Mr. Kenneth Brown remarked that "the course of Ralph Allen's tramway from his quarries on Combe Down to his wharf on the Avon is shown on Thomas Thorpe's *Actual Survey of Bath*, 1742. Starting in the reverse direction from Mr. Allen's Wharf on the Avon (the site of which is now cut across by the Kennet & Avon Canal), the wagon way went along what is now Prior Park Road and was nearly level for the distance of about 27 chains, then a sharp rise begins and continues up the road still known as Ralph Allen's Drive for about 66 chains, rising about 420 ft. at an average gradient of about 1 in 10. The remaining section of 27 chains rises but slightly. Altogether the total rise is about 450 ft. from about 70 ft. above sea level at Avonside to about 520 ft. and the length of the railway is about 1½ miles."

It has already been stated that this railway is the first of which a detailed description has survived; the account

* From *The Life and Times of Ralph Allen*, by R. E. M. Peach (1895), p. 78.

† *An Essay Towards the Descriptions of Bath*, by John Wood (the Elder); second edition (1749), p. 368.

in question is contained in " A Course in Experimental Philosophy " by Dr. John Theophilus Desaguliers, of which Volume I was published in London in 1734. The author himself says " There is a fine contrivance of an inclin'd waggon-way made of timber to bring down the stone from Mr. Allen's quarry to the river's side, the distance of near a mile, in waggons which come down the declivity on the artificial way by their own gravity, as the coal-carriages do near Newcastle. But this waggon-way differs quite from those in the North, every part being very much altered for the better, and the carriages themselves contrived to cary much more weight without danger." The technical description (which appears on pp. 274-279) was written by Charles de Labelye who became in 1751 the engineer for building Westminster Bridge.

Actually, both writers devote most of their attention to the vehicles rather than the permanent way, but we learn that the wagon-way was composed of parallel timbers of squared oak which supported " the strong part of the circumference of the wheel, while the flanch or large circumference of each wheel falls on the inside of the timber, that the carriage may not jump or run out of the way." The reference to the track as an oaken frame, and the comparison of its form with that of the Newcastle wagon-ways, strongly suggest the familiar wooden rails laid on sleepers or dormant timbers, but no mention of the precise form is made either by Desaguliers or by Labelye. The scaled drawings and wagon dimensions in the text enable the gauge to be measured as 3 ft. 9 in.

As this line was built not for coal traffic but for the conveyance of Bath Stone, the vehicles were not mere mine wagons but rectangular flat wagons of very robust construction and surprisingly modern appearance. The frame, formed of four oak beams 14 ft. long and 4 in. square, carried a solid platform of oak planks 13 ft. long by 3 ft. 6 in. in width. Movable sides could be attached by hooks to the rigid ends. Under the frame were two strong pieces of timber attached with iron carrying a half-ring of copper in which, being well lubricated, the axles turned with little friction. The axles were about 3 in. in diameter; one end was squared and the other round. These four-wheeled wagons had two axles so arranged that the square end of the rear axle was on the opposite side of the vehicle from the square end of the front axle. This arrangement permitted of all wheels being braked independently as, when the wheel on the square end (and with it the axle) were braked, the wheel on the round end could turn independently, and *vice versa*. Braking was controlled by a long wooden lever. The wagon wheels, which had six spokes, were of cast iron, about 20 in. in diameter and had 6-in. flanges on the inside.

Labelye concluded by saying " Mr. Allen, to whom I am oblig'd for a full and thorough survey of these carriages, told me, that one of them, when completely finished, and ready to be used, stands him in upwards of £30, which I thought proper to mention as a very reasonable price, considering the good and workmanlike manner in which everything is performed." The illustrations published by Desaguliers in 1734 (two of which are here reproduced) were of details of the wagons, and it was not until twenty years later that the railway itself was shown. It then appeared as a prominent feature of a view of Prior Park, published in *The Universal Magazine* for May, 1754. This and the G.W.R. painting obviously had a common origin, although there are minor differences in scenic details.

Ralph Allen died on June 29, 1764, in his 71st year, and was buried in Claverton churchyard, where a pyramidical monument to him still stands. The present writer has been unable to trace the date on which this famous wagon-way ceased to be used, but it is not shown on Day & Masters's map " published by W. Day, March 1, 1782."

Motorship " Prins Albert " for Dover—Ostend Service

The *Prins Albert*, the latest addition to the Belgian State Marine fleet, built by John Cockerill for the Dover—Ostend service, attained 25½ knots on her deep-water trials, and is therefore claimed to be the fastest motorship afloat. An inaugural luncheon on her maiden voyage last Monday, and a brief description of the vessel will be found on page 619. Her engines, which are of an improved type, are capable of developing 8,500 b.h.p. at 268 r.p.m. This fine ship was built under special survey of Lloyd's Register, and conforms to the regulations of the Belgian Marine Inspection, and with terms of the International Convention of 1929 and 1930.

Her principal dimensions are :—

Length, b.p.	360 ft.
Breadth	46 ft.
Depth, from shelter deck	25 ft.
Draught	11 ft.
Displacement	2,800 tons
Gross tonnage	2,938 tons
Net tonnage	1,884 tons

SWEDISH ENGINES FOR DENMARK

Eleven Pacific type express locomotives, displaced by electrification, have been acquired from the Swedish State Railways for service in Denmark

AS announced in THE RAILWAY GAZETTE of April 23 last, the Danish State Railways last March bought from the Swedish State Railways 11 steam locomotives, for which there was no further use in Sweden owing to the progress of electrification. The price for the engines was 23,700 Swedish Kroner (approx. £1,200) each. The engines, which were built by Nydquist & Holm from 1914 on, are of the 4-cylinder compound 4-6-2 type. They have been overhauled in the Copenhagen shops and are now painted in Danish State Railways colours. The necessary modifications have been made to transfer the driver's place to the right-hand side, for in Sweden it is on the left side. The engines are in service, and one of them was used to haul the inaugural train over the Storstrøm bridge. The leading dimensions of the locomotives are as follow:—

Cylinders (4), dia.	16½ and 25 in.
Piston stroke	26 in.
Wheels, coupled dia.	6 ft. 2 in.
Boiler—	
Length	17 ft. 5 in.
Dia.	5 ft. 6 in.
Heating surface—	
Evaporative	2,037 sq. ft.
Superheater	711 sq. ft.
Combined total	2,748 sq. ft.
Steam pressure	185 lb. per sq. in.
Grate area	39 sq. ft.
Tender water capacity	5,500 gal.
Coal capacity	5¾ tons
Weight of engine in working order	89 tons
Weight of tender " "	56 tons
Adhesion weight	50 tons
Maximum speed	79 m.p.h.

Owing to the greater power of the new engines it has been possible to allow an increased weight of train. For express trains the limit has hitherto been 450 metric tons, but this has now been raised to 500 metric tons. As a result, the express trains between Copenhagen and Gedser, crossing the Storstrøm bridge and conveying the through Berlin and Hamburg cars, have a restaurant added. These trains are now worked with the compressed-air brake, with which all Swedish State Railways engines are fitted. As has already been announced in these pages (February 5, 1937) the Hildebrandt-Knorr brake is being adopted as standard on the Danish State Railways. The 4-6-2 engines have had the vacuum brake added, however, so that they may be generally used both in Zealand and Jutland.

" NEWS OF A HUNDRED YEARS AGO."—The evening radio programme in the Northern region on October 19 will be notable for the beginning of a short series of features titled " News of a Hundred Years Ago." It is hoped to convey a vivid impression of the march of events in the North of England when the face of England was being changed by notable industrial developments. Every programme will have for its news a different headline. On October 19 " Travel " will be the subject, and listeners will be taken to the first days of the Grand Junction Railway. Other contemporary events which will come into the programme are the efforts of the coaching industry to compete with the new trains; the possibilities of steamships; and the development of the balloon for air transport.

Sir Herbert Walker

SIR HERBERT ASHCOMBE WALKER, K.C.B., General Manager of the Southern Railway, who, as recorded in our issue of June 4, is to retire on October 14, was born in London in 1868. The son of a medical practitioner, it was at first intended that he should follow the same profession, but for family reasons he abandoned medical studies, and in 1885 entered the railway service in the District Superintendent's office at Euston, of the London & North Western Railway. He was later transferred to the office of the Superintendent of the Line, Mr. G. P. Neele, and became an outdoor assistant to the Superintendent of the Line in January, 1889. In 1893 he was promoted to be Assistant District Superintendent of the North Wales Division, and ten months later became Assistant District Superintendent of the Southern Division, extending from London to Stafford. Soon afterwards he visited the United States to study the possibilities of adapting American traffic methods to British requirements, and prepared a valuable series of reports on his return. After nine years as Assistant District Superintendent, Mr. Walker became District Superintendent. In October, 1909, he was appointed Assistant to the Superintendent of the Line, and in July, 1910, became Outdoor Goods Manager of the Southern Division of the L.N.W.R. When, in 1908, the North London Railway began to be worked as part of the L.N.W.R., he organised the whole of the operating arrangements. He also had much to do with the conciliation scheme of 1907, on the working of which he was frequently consulted as an authority by outside parties.

Photo] [Eassano

Sir Herbert Walker, K.C.B.

General Manager, London & South Western Railway, 1912–23, and General Manager, Southern Railway, 1924–37

Sir Herbert Walker's association with what is now the Southern Railway began on January 1, 1912, when he succeeded Sir Charles Owens as General Manager of the London & South Western Railway. Shortly before the outbreak of war he became Chairman of the Railway Executive Committee, and was knighted in 1915. In 1917 he was created a K.C.B. From 1919 until decontrol, he continued with the Railway Advisory Committee associated with the Ministry of Transport. In four years, 1923, 1928, 1932 and 1936, Sir Herbert Walker has been Chairman of the General Manager's Conference at the Railway Clearing House. He was appointed a Member of the London and Home Counties Traffic Advisory Committee by the Minister of Transport on its formation in 1925, and in 1934 he was among the representatives of the railways appointed to the Transport Advisory Council. Sir Herbert Walker is a Director of the two railway-associated undertakings, Carter Paterson & Co. Ltd., and Pickfords Limited.

In 1929 and again in 1933 he accepted the invitation of the Board of Management to be Chairman of the Railway Benevolent Institution. In his early days he was a member of the London Scottish volunteer corps, and ever since has taken a prominent part in Territorial Army affairs; he was appointed Colonel Commanding the Engineer and Railway Staff Corps on December 18, 1924, and on October 17, 1934, he was granted the honorary rank of Colonel of the Supplementary Reserve Transportation units. Sir Herbert received the Territorial Decoration in 1929. A further distinction conferred upon him was the insignia of a Commander of the Legion of Honour, which he received at the hands of M. Paul Ramadier—deputising for the Minister of Public Works—on the occasion of the banquet in Paris on October 12 last year to celebrate the inauguration of the Dover-Dunkerque train ferry. He is a Lieutenant of the City of London.

Suburban electrification on the London & South Western Railway was inaugurated on October 25, 1915, and, although the L.B. & S.C.R. was in the field six years earlier with its 6,600-volt a.c. South London line, the present extensive network of Southern electrified line has been built up, under Sir Herbert Walker, entirely on the third rail 600-volt d.c. system originally adopted by the L.S.W.R.

Some of the new works and other improvements effected during Sir Herbert Walker's General Managership of the London & South Western and Southern Railways are:—

The present Waterloo station—one of the largest and most commodious in the world.
Feltham marshalling yard.
Electrification of suburban and outer-suburban lines.
Standard departure times.
Staff reorganisation, with the Commercial and Operating Departments co-ordinated under a Traffic Manager.
Colour-light signalling.
Great improvements and extension at Southampton Docks, King George V Graving Dock, and Ocean Quay (opened 1933).
London and Brighton electrification (opened 1933).
Eastbourne and Hastings electrification (opened 1935).
London and Portsmouth electrification (opened 1937).
London-Paris train ferry (opened 1936).
New stations at Exeter, Wimbledon, Woking, Hastings, Margate, Ramsgate, &c.

Sir Herbert Walker's railway career is further discussed in an editorial article on page 596.

RAILWAY NEWS SECTION

PERSONAL

Mr. R. S. Hudson, M.P. Secretary of the Department of Overseas Trade, has appointed Mr. R. Reid-Adam to be his Private Secretary for Department of Overseas Trade duties in the place of Mr. W. Harpham.

Members of the board of the French National Railways Company, representing the majority interest of the State in the new administration, have been appointed by M Queuille, Minister of Public Works, in agreement with M. Bonnet, Minister of Finance. The list comprises the following 10 officials, all holding high positions in the Government services: MM. Grunebaum-Ballin, Bouffandeau, Toutée, Devinat, Rueff, Bourgier, Clapier, Aron, Galliot, and Crescent. In addition, the board includes M. Théodore Tissier, President of the Consultative Committee of the Railways, and M. Raoul Dautry, honorary General Manager of the State Railways, as well as MM. Guinand and Grimpret, who had previously been appointed respectively President and Vice-President of the National Railways Company. M. Filippi, Inspector of Finance and member of the Committee of the State Railways, has been appointed General Secretary of the Company. The members of the board, representing the existing railway companies and their personnel, will be appointed at an early date.

The new Earl Peel, who succeeded to the title on the death of his father (the first Earl) last week, was formerly Viscount Clanfield. He was appointed a Director of the London Midland & Scottish Railway Company in June, 1936. He is also a working Director of James Williamson & Son Ltd., and a Director of the Sea Insurance Co.

Mr. S. G. Morgan, of the Engineer's Office, Southern Railway, has been transferred from Associate Member to Full Member of the Institution of Civil Engineers.

Mr. William Whitelaw, Chairman of the London & North Eastern Railway, has accepted the presidency of the Railway Benevolent Institution for 1938, and Sir James Milne, K.C.V.O., C.S.I., General Manager of the Great Western Railway, will act as Chairman of the board of management for next year. The anniversary festival will be held at the Connaught Rooms on Tuesday, April 5, 1938.

Mr. W. F. Wegener, whose appointment as Chief Mechanical Engineer, Federated Malay States Railways, was recorded in THE RAILWAY GAZETTE of July 23, was trained in the workshops of the Lancashire & Yorkshire and London & North Western Railways at Fleetwood from 1913-18. In 1919 he was transferred to Horwich as Draughtsman in the Head Office of the Outdoor Machinery Department, L. & Y.R., and in 1922, after grouping, was appointed Power Plant Engineer, Horwich locomotive works, L.M.S.R. Mr. Wegener went to Malaya in 1928 as Works Manager of the Federated Malay States Railways, in charge of workshops. For 1½ years, beginning in 1931, he acted as Running Superintendent of the railways, but during 1932 his designation was changed to Assistant Chief Mechanical Engineer. Now, as C.M.E., Mr. Wegener succeeds Mr. A. W. S. Graeme, whose retirement was recorded in our issue of June 11. Mr. Wegener is an Associate Member of the Institution of Civil Engineers.

Mr. W. F. Wegener

Appointed Chief Mechanical Engineer, Federated Malay States Railways

INSTITUTION OF LOCOMOTIVE ENGINEERS

The following have been elected members of the institution:—

Mr. E. C. Bredin, Chief Mechanical Engineer, G.S.R. (Ireland).

Mr. W. E. Bullman, Assistant Locomotive Superintendent, Tanganyika Government Railways.

Mr. C. M. Temple, Assistant Mechanical Officer, Nigerian Government Railway.

Mr. C. B. Unwin, Joint Managing Director, Kryn & Lahy (1928) Limited.

Mr. J. White, Chief Engineer, Westinghouse Brake Company of Australasia.

*Mr. A. B. MacLeod, Assistant to Locomotive Running Superintendent, Southern Railway.

*Mr. M. L. Mitter, Superintendent (Power), East Indian Railway.

* Transferred from Associate Member.

Sir Vivian E. D. Jarrad, late Agent of the Bengal-Nagpur Railway, has been appointed a Director of the South Indian Railway Company.

INDIAN RAILWAY STAFF CHANGES

Mr. P. K. Sarkar has been appointed to officiate as Deputy Chief Accounts Officer E.B.R., as from August 6.

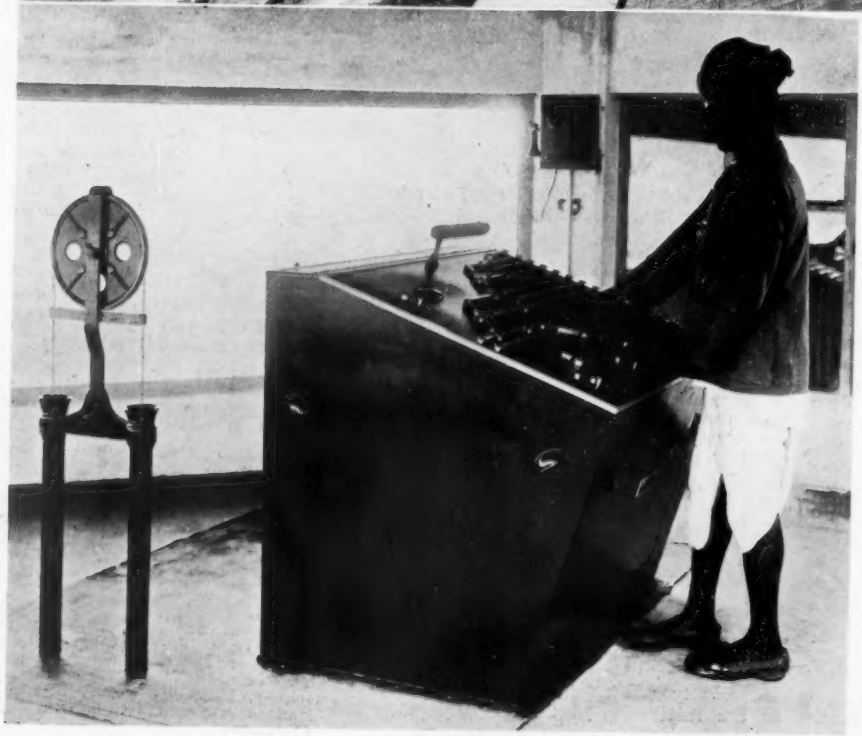
Mr. K. M. Abraham has been appointed Deputy Chief Accounts Officer, E.I.R., as from August 7.

Mr. A. F. Wilson, Chief Electrical Engineer, M. & S.M.R., on return from leave resumed his duties on August 23.

We regret to record the death on September 8, at Zurich, of Herr M. Wild, the former Superintendent of the 3rd Division of the Swiss Federal Railways, at the age of 74. Originally in the service of the old Swiss United lines, he was engaged on railway work in Turkey and on tramway work in Switzerland for a time. When the Federal Railways were formed in 1901 he was Inspector in the Traffic Dept. and in 1908 became Divisional Superintendent at Basle, moving to Zurich in 1917, and retiring in 1930. Herr Wild was well known at the International Timetable Conference.

We regret to record the recent death of Mr. Robert William Dewdney, at the age of 67. Mr. Dewdney was for many years in the service of the L.B.S.C.R. and Southern Railway, joining the

Right: One of the new 2-10-2 freight locomotives about to be shipped from Belgium for the Lung-Hai Railway (China). These powerful engines, which have a tractive effort of 55,000 lb., weigh, with tenders, 200 tons. Dimensions are given on page 617



Above: View of the new hump yard at Naihati, Eastern Bengal Railway, showing tail end of goods train being pushed over the hump. The control tower is on the right of the hump lines

Left: Control tower assistant operating thumb-switches on the control board

former company in 1884. He spent a year in the harbour section and secured a sound training there before transferring to the steamship section. On the organisation of the Southern Railway Dock and Marine Department under Mr. Gilbert S. Szlumper as Dock & Marine Manager in January, 1924, Mr. Dewdney was appointed Assistant Marine Superintendent & Harbourmaster at Newhaven. Subsequently his title became Divisional Marine Manager & Harbourmaster at Newhaven, and he held that office until his retirement from the railway early in 1933. Mr. Dewdney was elected a member of the Institute of Transport in April, 1926.

On Friday last, October 1, the members, professional advisers, and clerk of the Railway Assessment Authority and of the Anglo-Scottish Railways Assessment Authority, gave a luncheon in honour of the Chairman of the two authorities, Sir Joshua Scholefield, K.C. Sir James Curtis, a member of both authorities, was in the chair, and the toast of the guest of honour was proposed by Sir George Etherton, a member of the Railway Assessment Authority and Clerk of the Lancashire County Council. Sir Joshua Scholefield responded. The following were present at the luncheon (apart from those mentioned above) :—

Sir Claud Schuster, Sir Cyril Hurcomb, Sir Edward Holland, Sir Harry Pritchard, Sir George Gater, Sir Sidney Johnson, Sir William Wood, Messrs. R. B. Cross, R. H. Hill, P. J. G. Rose, I. Buchanan Pritchard, A. J. Lees, J. J. McIntyre, D. T. Griffiths, Isaac Dixon, H. W. J. Powell, F. Smith, G. Sowerby, S. E. Hitchcock, F. C. Buller, A. H. Grainger, H. Daykin, F. J. Ogden, H. L. Smedley, G. F. Stringer, John Allcock, H. J. Beavis, A. McD. Gordon, Edward Knox, G. Trevelyan Lee, J. A. Simpson, J. E. Tomley, John A. King, J. M. Cant, F. G. Fleury, W. S. Barnes, C. Howard King, Arthur Collins, W. B. Keen, G. Stoughton Harris, J. A. Southern, R. E. W. Johnson, A. E. Joll, and F. L. Bristow.

We regret to record the death, on September 26, of Mr. J. A. Picknell, at the age of 80 years. He began his railway career on the former London & North Western Railway in the Traffic Department at Euston in 1874, and after wide and varied experience in the different sections, both indoor and outdoor, was appointed to Willesden Junction, in 1901, as District Traffic Agent. During the 12 years he remained at Willesden his duties brought him into intimate contact with the coal trade, and he was well known to all the prominent fuel factors in the south of England. In 1913 he was appointed as Assistant in the District Goods Manager's Office at Broad Street, where he remained during the arduous war and post-war periods until his retirement in 1921. Mr. Picknell's death has been greatly regretted at Wembley L.M.S. Athletic Club, of which he was a popular member. The interment took place at Wembley Cemetery on September 29 where there was a large gathering of mourners and former colleagues.

Belgian-Built 2-10-2 Locomotives for China

The Lung-Hai east-to-west trunk line has ordered these large and up-to-date engines for its main line freight traffic

Of an order for eight 2-10-2 type locomotives placed by the Lung-Hai Railway (China) with the S.A. les Ateliers Mettalurgiques, Tubize, Belgium, four have recently been shipped in the ms. *Belray* from Antwerp. On page 616 is an illustration of one of these powerful engines, and the following are some of their leading dimensions :—

These locomotives are fitted with automatic stokers and other modern equipment, and are intended for heavy main-line traffic between the new terminal port of the Lung-Hai system at Lienyunkang, Hsuchow, Chenchow, Sian, and the new extensions south-westwards to Chengtu, in Szechwan, and north-westwards to Lanchow, in Kansu.

Gauge	1·435 m. (4 ft. 8½ in.)
Cylinders (2)—	
Dia.	645 mm. (25⅜ in.).
Stroke	711 mm. (28 in.).
Coupled wheels, dia.	1·400 m. (4 ft. 7 in.).
Wheelbase—	
Rigid	6·400 m. (21 ft.).
Total	12·455 m. (41 ft.).
Boiler—	
Dia. outside largest ring	2·358 m. (7 ft. 9 in.).
Pressure	14 kg. per sq. cm. (200 lb. per sq. in.)
Firebox—	
Length	3·600 m. (11 ft. 9⅜ in.).
Width	2·360 m. (7 ft. 9 in.).
Smoke tubes—	
Number	228.
Dia. (outside)	51 mm. (2 in.).
Length	5·000 m. (16 ft. 5 in.).
Superheater flues—	
Number	50.
Dia. (outside)	137 mm. (5⅜ in.).
Length	5·000 m. (16 ft. 5 in.).
Arch tubes—	
Number	4.
Diameter outside	76 mm. (3 in.).
Heating surface—	
Tubes	182·65 sq. m. (1,966 sq. ft.).
Flues	107·60 ,, (1,158 ,,).
Arch tubes	3·53 ,, (38 ,,).
Combustion chamber	31·70 ,, (340 ,,).
Superheater	115·58 ,, (1,243 ,,).
Grate area	8·50 ,, (91 ,,).
Weights—	
Leading bissel	16,450 kg. (16 tons 4 cwt.).
Coupled wheels	100,620 ,, (99 ,, 2 ,,).
Trailing bissel	17,800 ,, (17 ,, 10 ,,).
Locomotive total	134,870 ,, (132 tons 16 cwt.).
Tender	68,800 ,, (67 ,, 14 ,,).
Locomotive and tender	203,670 ,, (200 tons 10 cwt.).
Tractive effort at 85 per cent. boiler pressure	25,000 kg. (55,000 lb.).
Adhesion factor	4.
Tender capacities—	
Water	30 cub. m. 6,600 (7,000 gall.).
Coal	12,000 kg. (11¾ tons).

Forthcoming Events

Oct. 8 (*Fri.*).—Railway Students' Association (Edinburgh), at Goold Hall, St. Andrew Square, 7.30 p.m. Presidential Address by Mr. J. Macgregor.

Oct. 9 (*Sat.*).—Stephenson Locomotive Society (Midlands and Northern), at 4, Bury Old Road, Manchester. 6.30 p.m. Annual Meeting.

Oct. 11 (*Mon.*).—Institute of Transport (London), at Inst. of Electrical Engineers, Savoy Place, W.C.2, 5.30 p.m. Presidential Address by Sir Alexander Gibb, G.B.E.

Oct. 12 (*Tues.*).—Institution of Locomotive Engineers (Manchester), at 36, George Street, 7 p.m. Address by Lt.-Col. F. R. Collins, D.S.O.

Permanent Way Institution (Brighton), at Railway Inst., New England Street, 7.15 p.m. "The Evolution of Permanent Way," by Mr. Charles E. Lee.

Permanent Way Institution (Sheffield), at Royal Victoria Hotel, 7 p.m. "Modern Signalling in Relation to Permanent Way," by Mr. O. S. Nock.

Oct. 13 (*Wed.*).—Permanent Way Institution (London), at Underground Railway Dining Club, Pelham Street, S.W.7, 7 p.m. "Recent and Probable Developments in Permanent Way," by Mr. K. Brinsmead.

Oct. 13–15.—Institution of Mechanical Engineers, Storey's Gate, London, S.W.1. General Discussion on Lubrication and Lubricants.

Oct. 14 (*Thurs.*).—Institute of Fuel (London), at Geological Society, Burlington House, Piccadilly, W.1, 2.30 p.m. Presidential Address by Sir Philip Dawson, M.P. Annual Dinner, at Connaught Rooms, Great Queen Street, W.C.2, 6.45 for 7.15 p.m.

Oct. 15 (*Fri.*).—Omnibus Society, at Inst. of Marine Engineers, The Minories, London, E.C.3, 7 p.m. Debate : "The Ideal Transport Undertaking is of Moderate Size." Affirmative : Mr. I. Watkin. Negative : Mr. N. Burchill.

Oct. 16 (*Sat.*).—Permanent Way Institution (Manchester–Liverpool), at Temperance Inst., London Street, Southport, 3 p.m. "Creosoting of Timbers," by Mr. R. Chamberlain.

Stephenson Locomotive Society (Scottish), at Mathieson's Restaurant, Falkirk, 3 p.m. Annual Meeting.

The New Midland Timetable in Operation

In the first week's operation of the new Midland timetable, although fog over various parts of the system in the mornings upset certain of the workings considerably, some remarkable locomotive performances were recorded, drivers finding it possible to recoup considerable amounts of time, notwithstanding the cuts that have been made in their schedules. Most outstanding of the runs noted was probably that of "5X" 4-6-0 No. 5734 *Meteor*, which on the first day of the new service worked the 4.37 p.m. from Leicester to St. Pancras in just under 91 min., 8 min. less than the new 99 min. time for the 99·1 miles, and 14 min. less than the schedule of the same train in the previous week. At Desborough summit, after climbing 4¼ miles at 1 in 132 from Market Harborough, the speed with a 285-ton train was 55 m.p.h., and at Sharnbrook summit, after 2¾ miles up at 1 in 120, the same minimum was maintained; the lowest speed on the long 1 in 200 grades between Bedford and Luton was 57 m.p.h., and the 19·6 miles between the two last-mentioned towns, mostly uphill, were covered in 18 min. 29 sec. The most exceptional part of this journey consisted in passing Kettering, 27·1 miles from Leicester, in 26 min. 19 sec., in consideration of the intervening summits at Kibworth and Desborough and their approach grades. The times into St. Pancras were 90 min. 57 sec. from Leicester, 99·1 miles; 74 min. 17 sec. from Market Harborough, 82·9 miles; 64 min. 38 sec. from Kettering, 72·0 miles; 59 min. 9 sec. from Wellingborough, 65·1 miles; 54 min. 17 sec. from Sharnbrook summit, 59·8 miles; 46 min. 12 sec. from Bedford, 49·8 miles; 27 min. 43 sec. from Luton, 30·2 miles; and 18 min. 40 sec. from St. Albans, 19·9 miles.

On the same day the 4.11 p.m. express from Leicester, with "5X" 4-6-0 No. 5694, *Bellerophon*, brought up a train of 289 tare tons (300 tons gross) in 97 min. 33 sec., despite a signal stop between Kentish Town and St. Pancras which cost 1¾ min., leaving a net time of 95¾ min. Minimum speeds on this run were 44 m.p.h. at Desborough summit, 50 at Sharnbrook summit, 60 at Ampthill, and 58½ before Leagrave, the excellent time of 18 min. 7 sec. being achieved up the 19·6 miles from Bedford to Luton, including 10 miles at 1 in 200. Speed was not allowed to exceed a maximum of 81 m.p.h., and scrupulous attention was paid to all service slacks. Another good run was made from Nottingham on the up Thames-Forth Express, with "5X" 4-6-0 No. 5663, which covered the 105·3 miles from Melton Mowbray to St. Pancras with 255 tons in 105 min., but this excess of 2 min. over schedule was more than accounted for by a dead stand for 2 min. at adverse signals at Whissendine. The 72 miles from Kettering to St. Pancras occupied 66 min., including crossing over from slow to fast lines at Kettering South junction; Bedford to London took 45 min., and Luton to St. Pancras 28 min.

Later in the same week a remarkable run was made by the 10 a.m. Thames—Clyde Express from St. Pancras, on a morning when fog had disarranged the workings round London, so causing signal delays from late trains ahead. As a result, the express was brought practically to a stand by signals at Leagrave, again at Souldrop box in the middle of the ascent of Sharnbrook bank, and twice very severely checked between Wellingborough and Kettering, but reached Leicester only one minute late. The load was only seven vehicles, 213 tons tare and 225 tons gross, but the engine —"5X" 4-6-0 No. 5658, *Keyes*— passed Luton in less than "even time," despite the heavy climbing out of London. Up the initial 1 in 182 to Finchley Road 49 m.p.h. was attained; the 5 miles up to Elstree, mostly at 1 in 160 to 176, reduced speed from 68 to 59 m.p.h., and the 4 miles similarly inclined up to Sandridge from 77½ to 61½ m.p.h. Thus Elstree, 12·4 miles, was passed in 14 min. 31 sec. from St. Pancras, St. Albans, 19·9 miles, in 20 min. 48 sec., and Luton, 30·2 miles, in 30 min. 2 sec. The Leagrave signal check cost 3 min., but with a maximum of 86½ m.p.h. below Ampthill the train passed Bedford, 49·8 miles, in 48 min. 33 sec. (45½ min. net), and Sharnbrook, 56·6 miles, in 53 min. 59 sec. Then followed the unfortunate Souldrop check, with a recovery up a 1 in 119 grade to Sharnbrook summit (59·7 miles, passed in 59 min. 38 sec.), but Wellingborough, 65·1 miles, was cleared in 64 min. 10 sec., and despite 6 min. thus lost by signals Kettering would have been reached on time, in 71 min. from London. Further checks supervened, however, and the actual time for the 72·0 miles was 74 min. 25 sec., or 65 min. net. An exceptionally fine climb was made from there to Desborough summit, the engine accelerating up 1 in 125-118 to 45 m.p.h. at Glendon North junction, and to 55½ on the ½-mile downhill beyond, while the continuation to Desborough summit (3¼ miles, mostly at 1 in 130) was surmounted at 55 m.p.h. So Desborough North box, 6·5 miles, was passed in 8 min. 51 sec., Market Harborough, 10·9 miles, in 12 min. 43 sec., and, with the prescribed 45 m.p.h. slacks both here and at Wigston, Leicester, 27·1 miles, was reached in 28 min. 41 sec. instead of the 31 min. allowed. The running on this journey was equivalent to a non-stop time of about 89¾ min. from London to Leicester.

Other good runs made on the first day of the accelerated services were by the 10.30 a.m. down Manchester, on which "5X" 4-6-0 No. 5964, *Bellerophon*, despite a permanent way check at Elstree, passed St. Albans with a 225-ton train in 23 min., Luton in 32½ min., Bedford in 48¼ min., Kettering in 67¾ min., and Market Harborough in 79 min.; a dead stand of a minute for signals outside Leicester did not prevent the train from arriving exactly to time, in 99 min. from London. The 2.10 p.m. down, non-stop to Nottingham, also with a load of 225 tons, passed Luton in 30½ min., with a minimum speed of 64½ m.p.h. at Sandridge summit, but was checked to 10 m.p.h. at Leagrave; then, with 87 m.p.h. before Bedford and 54 at Sharnbrook summit, Kettering (after a slow to cross over at Kettering South junction) was passed in 68½ min., or 65 min. net. Nottingham, 123·5 miles, was eventually reached in 120 min. 39 sec., or 116 min. net., instead of the scheduled allowance of 123 min. It is clear from such details as these that the 4-6-0 locomotives have a mastery over the new timings, and with normal loads an ample margin for the recovery of out-of-course slacks.

For the new workings 19 engines of the "5X" type have been allocated to Kentish Town, 7 to Derby, 3 to Sheffield, 5 to Nottingham, and 17 (used also between Leeds and Carlisle) to Leeds. Of the Class "5" 6 ft. 4-6-0's 7 are at Kentish Town, 4 at Derby, 5 at Sheffield, 6 at Nottingham, 1 at York, 2 at Leeds, 8 at Trafford Park (Manchester), 7 at Saltley, 3 at Gloucester, and 6 at Bristol—a total of 51 of the former and 49 of the latter, or 100 in all. As far as possible all the high speed timings between Derby and St. Pancras and Nottingham and St. Pancras are worked by "5X" engines. Maximum tare loads on these timings are fixed at 300 tons for these engines, 255 tons for Class "5" 4-6-0's, and 220 tons for 3-cylinder compound 4-4-0 locomotives.

THE L.N.E.R. MUSICAL SOCIETY.—The twenty-ninth annual meeting of the members was held in the board room at Liverpool Street station on Wednesday, September 29, with Mr. William Whitelaw, President of the society, in the chair. On the motion of the chairman, seconded by Captain F. H. H. Thomas, the report and balance sheet for the past season were adopted. On the motion of Mr. E. Milburn, seconded by Mr. A. W. A. Spicer, the officers of the society and the members of the committee were re-elected. Mr. Whitelaw, in replying to a vote of thanks to the chair, thanked all connected with the society's work. He realised fully that, in order to render the music in their efficient way, much time had to be given to rehearsal by the members of the choir and orchestra, and he emphasised the need for a continual striving to achieve still greater successes, as it was only in that way that real advancement could be made.

New Dover-Ostend Ms. "Prins Albert"

Built to the order of the Belgian State Marine Department, this fine vessel is claimed to be the fastest motorship afloat

At the invitation of the Belgian Minister of Transport, we were present at a luncheon on board the new ship at Dover on Monday last, to celebrate her maiden voyage and to enable her to be welcomed at that port. The large gathering of British and Continental press representatives also had an opportunity to inspect the vessel as she lay at the pier-side.

Built and engined by the well-known firm of John Cockerill, the *Prins Albert* is in point of size and hull very like her predecessor the ms. *Prince Baudouin*, but she accommodates 100 more passengers and has more up-to-date diesel engines.

The *Prins Albert* is the second large motor ship to be built entirely in Belgium, and is the 28th mail-boat supplied to the State Marine Department by Cockerills. In attaining 25½ knots on her deep-water speed trials, she proved herself ¼ knot faster than the *Prince Baudouin*, and secured the record as the fastest motor ship in the world. Her accommodation is for about 1,800 passengers, on five decks.

The first class accommodation is as follows: on the lowest deck are three sleeping saloons (or rest-rooms), one reserved for ladies. Above these are the restaurant, kitchens, &c., and over these again are the smoking room, lounge, and two private state rooms. The two upper decks are made up of verandah and promenade space, six more private state rooms—including the royal suite of four—wireless, telephone and telegraph offices.

A marked feature of this ship is the improvement of the second class accommodation, with separate ladies' and gentlemen's saloons, a very fine dining saloon, and six private state rooms. Roomy promenade and sheltered decks are also noteworthy. Altogether there are 220 rest-room berths, and 300 meals can be served in the four restaurants or dining saloons. The decoration by the artist, Mr. Henry van de Velde, is striking throughout, and all woodwork, which is specially handsome, is in Belgian Congo timber. The whole interior combines comfort and modern art.

The Engines

The two main diesel engines, built under Sulzer licence, are two-stroke single-acting crosshead units, each with 12 cylinders having a diameter of 23-in. and 33-in. stroke, and giving 7,500 b.h.p. at 258 r.p.m. The most important novelty is the scavenging system now connected to the motors, which eliminates the large independent blowers formerly required. Special silencers—the result of research at Brussels University—are fitted, and are remarkably efficient.

The wheelhouse is particularly interesting, the captain having at his disposal the most modern nautical apparatus, such as a radiogoniometer with direct reading—a recent invention by a young Belgian scholar, Monsieur Marique—a self recording ultra sonorous depthmeter, and steering pushers.

At the conclusion of the luncheon, at which many distinguished guests were present, M. H. H. Jaspar, Belgian Minister of Transport, welcomed his guests, and briefly described the *Prins Albert*, which, he said, was another link between Great Britain and the Continent and was destined to increase the already close friendship between Belgium and England. Mr. Gilbert Szlumper, Assistant General Manager, Southern Railway, congratulated the Belgian State Marine in possessing such a fine and up-to-date vessel. An illustration and a few further details of the ship will be found on page 612.

The East Anglian Express

The first records that are to hand of the working of the new East Anglian service of the L.N.E.R. show that the 2¼-hr. schedule between Liverpool Street and Norwich, with so light a load as the six coaches forming the train, which have a tare weight of 220 tons, is a simple proposition for the engines employed. To the working of this train two "B.17" class 3-cylinder 4-6-0 locomotives—Nos. 2859, *East Anglian*, and 2870, *City of London*—have been allocated, and have been provided with the now familiar Gresley streamlined casing and front end for this purpose. A feature of the runs mentioned was the over-emphasis on all speed restrictions, which were negotiated at a speed considerably lower than the specified figures; yet time was kept with ease. Coming up from Ipswich No. 2859, with a gross load of 230 tons, after touching 70 m.p.h., slowed to 47 m.p.h. at Manningtree where the specified restriction is 65. Colchester was passed at the reduced speed of 36 m.p.h., and Chelmsford, 39·0 miles, in 44 min. 35 sec., at 34 m.p.h., though the permissible figure there is 45 m.p.h. On the gradually rising grades to Shenfield a maximum speed of 66 m.p.h. was reached, and on the final 2 miles to Ingrave summit, at 1 in 165-135, the minimum speed was 60 m.p.h. A top speed of 82½ m.p.h. was reached at Harold Wood, and after a signal check to 47 m.p.h. at Gidea Park, 70 m.p.h. was again reached at Chadwell Heath, the capacity of the locomotive for rapid acceleration being very marked. Despite further signal checks, Liverpool Street, 68·7 miles, was reached in 79 min. 45 sec., on time, or about 77½ min. net.

In the reverse direction No. 2870, with the same load, after being slightly checked by signals before Bethnal Green, reduced to 18 m.p.h. through Stratford instead of the 25 m.p.h. allowed, but attained 60 m.p.h. on the gradually rising grades past Chadwell Heath, and surmounted the 3¼ miles of Brentwood bank (mostly 1 in 103 and partly 1 in 85) at a minimum of 39 m.p.h. From Shenfield matters were taken very easily, and speed was reduced to 33 m.p.h., through Chelmsford (restriction 45), and from 75 to 55 m.p.h. through Witham, where 75 m.p.h. is permissible. But 64 m.p.h. was attained by Kelvedon, and increased to 65 up the 1 in 222 to Hill House, with a further increase to 74 on falling grades prior to slacking to 39 through Colchester, 51·7 miles, in 58 min. 26 sec. Approaching Manningtree speed was reduced to 55 m.p.h. (specified limit 65), and very easy subsequent running brought the train into Ipswich in 78 min. 15 sec., 1¾ min. early. With speed up to the limits permitted, at points where speed restrictions are in force, it is clear that these times could be materially reduced if necessary, and that if and when desirable, a 2 hr. timing between London and Norwich, even inclusive of a brief stop at Ipswich, should not be beyond the limit of possibility.

RAILWAYS UNDER THE VALENCIA GOVERNMENT.—The Barcelona press of September 18 publishes a notice informing the public that the Madrid–Saragossa–Alicante (M.Z.A.) Railway Company announces the cessation of the passenger service in Catalonia until further notice. This is, no doubt, a further consequence of the conditions referred to in THE RAILWAY GAZETTE of September 24. The Northern of Spain Railway works (or worked) most of the lines in Catalonia, but the M.Z.A. owns the all-important line between Barcelona and the frontier and also the line through Tarragona to Saragossa and thence to Madrid. Between Barcelona and Valencia the line is M.Z.A. for 105 km. to Tarragona, and Northern of Spain for the remaining 272 km., Tarragona–Valencia. The Valencia–Madrid line is Northern property as far as La Encina junction, where it joins the M.Z.A. Alicante–Madrid main line. Under the "collectivisation" orders of the Catelonian Government and the many changes dictated by the "workers' councils" and syndicates who have been working the lines since the outbreak of the war, many of the old distinctions are being lost.

MINISTRY OF TRANSPORT ACCIDENT REPORT

Bow L.M.S.R.; April 1, 1937

About 7.27 a.m. the 7.17 a.m. Bow to Broad Street was run into, at 10 to 15 m.p.h., by an empty coach train which was to form the 7.28 a.m. Bow to Broad Street. The former had just arrived empty from Devons Road sidings, but a number of passengers had entered it; 19 were injured or complained of shock, and 5 were detained in hospital. The stationary train had 7, the other 6, bogie coaches; each was drawn by an 0-6-0 tank engine. The coaches of the stationary train, built in 1909, had wooden bodies and wood and steel underframes, with ordinary buffers; those of the other train had steel panelled, wood framed bodies on steel underframes, and shock absorbing buffers. There was no derailment. Serious damage was confined to the two rear vehicles of the stationary train, which were telescoped about 6 ft. Thick fog prevailed, visibility being only 12 yd. in places. Fogmen had been summoned some time previously but had not all reached their posts. The accompanying diagram shows the circumstances of the accident, which was inquired into by Lt.-Col. E. Woodhouse.

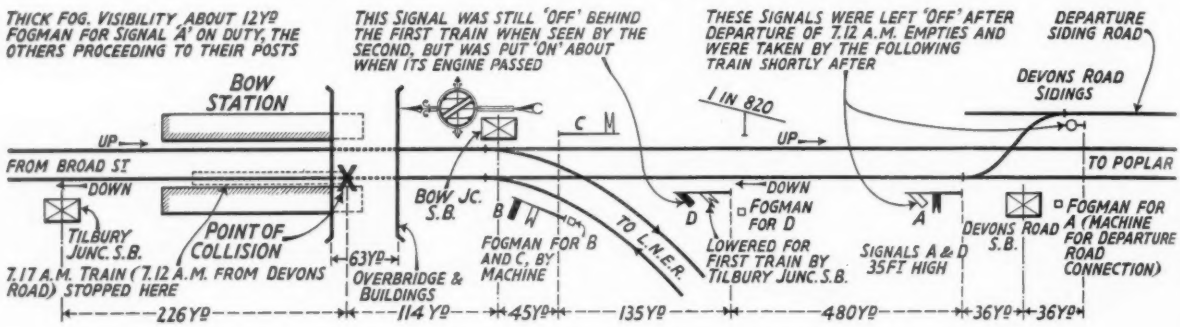

THICK FOG. VISIBILITY ABOUT 12YD FOGMAN FOR SIGNAL 'A' ON DUTY, THE OTHERS PROCEEDING TO THEIR POSTS
THIS SIGNAL WAS STILL 'OFF' BEHIND THE FIRST TRAIN WHEN SEEN BY THE SECOND, BUT WAS PUT 'ON' ABOUT WHEN ITS ENGINE PASSED
THESE SIGNALS WERE LEFT 'OFF' AFTER DEPARTURE OF 7.12 A.M. EMPTIES AND WERE TAKEN BY THE FOLLOWING TRAIN SHORTLY AFTER
DEPARTURE SIDING ROAD
DEVONS ROAD SIDINGS
BOW STATION
1 IN 820
C M
UP
FROM BROAD ST
DOWN
TO POPLAR
BOW JC. S.B.
B W
FOGMAN FOR B AND C, BY MACHINE
TO L.N.E.R.
D
FOGMAN FOR D
LOWERED FOR FIRST TRAIN BY TILBURY JUNC. S.B.
A
SIGNALS A & D 35FT HIGH
DEVONS ROAD S.B.
FOGMAN FOR A (MACHINE FOR DEPARTURE ROAD CONNECTION)
TILBURY JUNC. S.B.
POINT OF COLLISION
7.17 A.M. TRAIN (7.12 A.M. FROM DEVONS ROAD) STOPPED HERE
63YD
OVERBRIDGE & BUILDINGS
226YD
114 YD
45YD
135YD
480YD
36YD
36YD

Diagram showing circumstances of Bow accident

The leading train was booked to leave the departure siding at Devons Road at 7.12 a.m. but did so 10 or 11 min. late. Driver A. S. Trowell said he followed the previous train up and waited at the exit disc signal while the 7.7 a.m. from Poplar passed. Visibility was 10 or 12 yd. when he left; he had been standing only ¼ min. when the collision occurred. The guard, J. Mercer, said the tail light was burning properly at Devons Road.

Driver E. A. Dunster, of the empty train, saw nothing of the preceding train as he ran slowly along the departure road; finding the disc "off" he proceeded. He exploded a detonator and could just see Devons Road starter "off" and Bow Junction distant "on." He heard no shouts from the fogman and could not tell whether a dim light he saw was the latter's lamp or fire. At 10 yd. from Bow Junction home, which he approached slowly, he could see both it and Tilbury Junction distant "off," so he released his brakes and opened the regulator. The overbridge was full of steam and he saw nothing of the stationary train until he struck it. Fireman A. Saunders confirmed this evidence.

Signalman C. E. Patmore came on duty at Devons Road at 6.0 a.m. and learnt that fogmen had been summoned. He could just see the engine of the 7.12 a.m. empties waiting at the disc. The only times booked at this box are those at which empties leave the sidings. Patmore sent "train entering section" for this train at 7.23 a.m. As it was starting he was called to the telephone. Signalman J. Meehan, Bow Junction, told him that Platelayer Dennison, allocated to Devons Road up distant as fogman, had reported there. Patmore had his back to the line while telephoning. He said only Dennison's arrival was discussed; the conversation took 2 min. (later he reduced this estimate to 1 min.). When he turned from the telephone he saw a train passing from the departure road to the down line. At first he thought it was the 7.12 a.m., which must have drawn out very slowly, but, looking for and not seeing the engine of the 7.25 a.m. concluded that the latter had followed the 7.12 a.m. out. He was about to send forward "train running away" when he received "obstruction danger." He admitted that as the 7.12 a.m. did not leave until 7.23 a.m. the second train was likely to follow it closely and he ought to have put the disc to danger before telephoning.

The fogman for Bow Junction distant was close to Patmore's box, but it was not the man's practice to keep him informed of train movements. Another fogman is stationed at the box for tail lamp observation, but he usually places himself on the east side of the line to give information regarding up trains. The first mentioned man, Platelayer C. Ward, said the two trains seemed to be running "only a few seconds" apart. He realised the second was too close and thought something was amiss. He knew Devons Road starter had remained "off" for both, but could not see the disc. He placed a detonator on the departure road after the first train left, Bow Junction distant being "on." Though he tried to attract the attention of the driver of the second train by shouting and showing a red light, it did not occur to him to put other detonators on or tell Patmore at once what had happened.

Signalman Meehan said the first train passed him very slowly at about 7.26 a.m.; he restored his down home lever as it passed and noted the tail lamp after doing so. He did not send "out of section." He next telephoned to Patmore about Platelayer Dennison, being positive he did not do so until his home signal was put to "danger." The conversation was quite short; turning from the telephone he saw the engine of the second train, and immediately after heard the collision. He thought the train approached faster than the first one. Platelayers T. Jones and J. Dennison gave evidence showing that the two trains were running very close together. The former shouted to the driver and guard of the second. On reaching his post he found Bow Junction home was "on."

Inspecting Officer's Conclusions

If the 7.12 a.m. empty train was starting, or passing his box, when he was called to the telephone, Patmore was clearly at fault in not first restoring the disc, and, knowing the time, ought to have realised that the 7.25 a.m. was probably at no great distance from the 7.12 a.m. It is difficult to believe that the telephone conversation can have lasted so long as a minute; it was admittedly confined to the subject of Dennison's arrival. Patmore's statement that the first train passed him and the second did so partly, while he was telephoning, cannot be accepted. His evidence conflicts directly with Meehan's, and in view of what Jones and Dennison stated, Col. Woodhouse accepts Meehan's statement in preference to Patmore's concluding that the 7.12 a.m. left Devons Road about a minute before their conversation.

The accident came about primarily through Patmore's negligence in failing to replace the disc. Responsibility falls mainly on him, a man with 25 years'

experience as signalman, 14 of them at Devons Road, and a good record. Meehan's statement that he put his home signal to "danger" before telephoning is accepted; he cannot be criticised for waiting until the 7.12 a.m. reached him, considering the fog. There is no reason to doubt that Driver Dunster found that signal "off"; it was probably put to "danger" as his engine was passing it. The accident might possibly have been prevented had Ward acted promptly when he realised the situation. He could have put a detonator on with his machine to attract the guard's attention. He ought to have told Patmore immediately what had happened. Had "train running away" been sent promptly, Meehan might have been able to stop the second train at his home signal. Some responsibility must fall on Ward, a man with 33 years' service and a good record.

Remarks

The underframes of the two rear coaches of the stationary train, though not all-steel, were not damaged to any serious extent. It is likely the effects of collision would have been minimised had they had shock absorbing buffers; telescoping would possibly not have occurred.

Col. Woodhouse draws attention to the time taken to obtain the fogmen's services. Sent for at 4.45 a.m., they reached their posts between 6.45 and 7.30 a.m. A cyclist messenger is used, the 23 men living at considerable distances, up to 11 miles away. A considerable time must elapse before all can be called, apart from the time taken to report, when fog hampers transport. In practice, reliance has to be placed on their reporting on their own initiative. Jones, who lives 3 miles off, came on duty earlier than usual by train, and Ward had an hour's walk from home and booked on duty an hour earlier than normal; neither was called. The problem is of peculiar difficulty in urban areas, specially in London, where men often have to live a long way from work; it is desirable that the introduction of colour-light signalling should be expedited on lines carrying dense traffic through areas particularly liable to fog. A start has been made on this line, nearer Broad Street; it is hoped that the company will thereby find it practicable to extend it.

The First Diesel Engine

Perfect organisation and a high sense of the dramatic characterised the proceedings at Augsburg on Monday when the M.A.N. celebrated the 40th anniversary of the first diesel engine. The guests numbered about 300 from various countries; THE RAILWAY GAZETTE was represented by Mr. Chas. S. Lake. They were taken to the M.A.N. works in private buses and entered the yard between lines of apprentices in boiler suits. Frau Martha Diesel (the great inventor's widow) and the son, Herr Rudolf Diesel, were present.

Commemorative plaque of first diesel engine

The ceremony took place in a large workshop which had been converted by hangings into a hall, with a raised platform at one end for about 60 performers of the Munich Philharmonic Orchestra conducted by Herr Siegmund von Hausegger. The proceedings were opened at 11.0 a.m. by the orchestra playing Weber's "Euryanthe" overture. Direktor Otto Meyer of the M.A.N. welcomed the guests in a short speech, and was followed by Direktor Walther Winterle who traced the history of the diesel engine and said that, while others had done some pioneer work in evolving this type of engine, it was Rudolf Diesel and his collaborators who had made it a practical success. In the intervening forty years it had developed from the first small single-engine vertical engine before them to the modern multi-cylindered high-powered product of today which was used for such a variety of purposes.

An outstanding rendering of Beethoven's Fifth Symphony elicited prolonged applause, and was rewarded by a speech of thanks to the orchestra from Direktor Otto Meyer. Then followed a spectacular transformation scene. As the last strains of the Horst Wessel Song died down, there was a rending sound as the drapery "walls" of the hall fell away, disclosing a number of modern diesel engines which were all started up at precisely the same second. The final note (C sharp) of the orchestra was then reached by these engines at the end of an ascending scale.

An opportunity was then afforded for a tour of the works before the large party repaired for luncheon to the Drei Mohren (Three Moors) Hotel. Among Reichsbahn officers present at the ceremony were Herren Buchwald, Wilhelm Emrich, A. Gollwitzer, Rudolf Graszl, Otto Hellmann, Leo Hofmann, W. Ostermann, and Stroebe.

STAFF AND LABOUR MATTERS

Official Cost of Living Inquiry

The main-line railway companies and the railway trade unions are co-operating with the Ministry of Labour in the official inquiry which is being undertaken into working-class expenditure. The Minister of Labour recently announced in the House of Commons that during October a large number of working class households is to be visited and invited to supply budgets, on forms to be provided, giving details of household expenditure. The inquiry is intended primarily to furnish full and current material for a revision of the basis of the official cost-of-living index figures, and it will also provide information required by the Health Departments in connection with questions relating to diet and nutrition.

The inquiry will be organised through the employment exchanges, which will, as a rule, obtain the assistance of local committees and of voluntary helpers in each district to visit the households, explain what is required, and collect the budgets. Altogether four censuses of family budgets will be taken, at a cost to the nation of £40,000. In addition to the census to be started on October 17, there will be others during the winter and the spring and summer of next year. The Minister of Labour will pay 2s. 6d. a budget and a bonus of 2s. 6d. for those who complete the four budgets. The 30,000 people, who have been selected at random, are adult wage-earners and small salary earners distributed throughout the country. They include manual workers who pay unemployment insurance and non-manual workers who have incomes which do not exceed £250 a year. A due proportion of railway workers will be included.

BERLIN RAILWAY TRAFFIC.—The Berlin Stadt, Ring and Vorortbahnen carried during the year 1936 a total of 408 million passengers, equal to 35½ per cent. of the total rail and road traffic of Berlin, compared with a proportion of 33½ per cent. in 1935.

NOTES AND NEWS

The Wedgwood Report.—Copies of the Wedgwood Committee's report upon the Indian railways are now obtainable from the office of the High Commissioner for India, India House, Aldwych, London, W.C.2, price 2s.

Norwegian Private Line.—The Norwegian State Railways have taken over the privately-owned Valdresbanen, which runs from Eina to Fagernes, a distance of 67 miles. It is a standard-gauge system owning seven locomotives and 52 vehicles.

Railway Benevolent Institution.—Mr. William Whitelaw, Chairman of the L.N.E.R., has accepted the presidency of the Railway Benevolent Institution for 1938, and Sir James Milne, K.C.V.O., C.S.I., General Manager of the G.W.R., will act as Chairman of the board of management for next year. The anniversary festival will be held at the Connaught Rooms on Tuesday, April 5, 1938.

European Timetable Conference.—The European Timetable Conference (Conference Européenne des Horaires et des Services Directs, or Europäische Fahrplan und Wagenbeistellungs-Konferenz) is being held this year at Stockholm; it opened on Monday last, October 4. This conference discusses arrangements for next summer's through international train services, which form the basis of many of the national timetables, and must therefore be fixed early.

Institution of Railway Signal Engineers.—At a meeting in London on October 6, a discussion was opened by Mr. A. Moss, Member of Council on "Central Signalbox Amalgamation Schemes" in which among others the following spoke: Messrs. R. Dell, C. Carslake, L. J. Knotts, W. Challis, F. Downes, F. H. D. Page, S. Williams, B. Wagenrieder, W. J. Sadler, H. H. Dyer, and the President, Mr. H. M. Proud. The annual dinner will be held at the Criterion Restaurant, London, on Friday, October 22.

New Austrian Cable Railway.—The construction of the cable railway from St. Anton (in the Arlberg district of western Austria) to the Galzig summit is well under way, and its opening is announced for December 1. St. Anton stands 4,275 ft. above sea-level, and the Galzig summit is 2,900 ft. higher. The railway, which will be of considerable service to ski-ers during the winter sports season, is to be extended for another 1,660 ft. to the summit of the Valfager, and this extension is expected to be ready for use in December, 1938.

Charges of Non-Amalgamated Railways.—The Railway Rates Tribunal, sitting on Tuesday, October 5, heard applications from the non-amalgamated railway companies and committees to which Sections 35 and 38 of the Railways Act refer, for leave to apply to their respective schedules of standard charges and their exceptional rates the 5 per cent. increase recently granted by the tribunal to the four amalgamated companies. The Court reserved its decision in all cases except that of the South Yorkshire Joint Line, consideration of which was postponed.

Dover, St. Margaret's & Martin Mill Light Railways Order.—As the period for the completion of the railway authorised by the Dover, St. Margaret's and Martin Mill Light Railways Order, 1909, expires on October 11, an Order has now been issued by the Minister of Transport extending the period to October 11, 1938.

Canadian Pacific Earnings.—Gross earnings of the Canadian Pacific Railway for the month of August, 1937, amounted to $11,915,000, a decrease of $95,000 in comparison with August, 1936. In the working expenses of $11,338,000 there was a saving of $37,000, leaving net earnings $58,000 lower, at $577,000. Aggregate gross earnings for the first eight months of 1937 were $90,747,000, an improvement of $5,116,000, and the net earnings of $9,933,000 were higher by $1,528,000.

Canadian National Earnings.—For the month of August, 1937, gross earnings of the Canadian National Railways amounted to $16,485,561, an increase of $751,936 over August, 1936. Operating expenses ($15,927,031) advanced by $873,987, to leave net earnings of $558,530, which were $122,051 lower than for August, 1936. Aggregate gross earnings from January 1 to August 31, 1937, were $128,144,860, an improvement of $11,653,512, and the net earnings for the eight months were $8,185,377, an increase of $4,942,553.

Hants & Dorset Motor Services Limited.—An extraordinary general meeting of this company has been called for October 15, when the shareholders will be asked to confirm the transfer of £50,000 from depreciation reserve to general reserve, and to consider resolutions increasing the capital of the company from £550,000 to £700,000 by the creation of 150,000 additional ordinary shares of £1 each and capitalising £50,000 of the general reserve in the form of 50,000 of the proposed additional ordinary shares, to be allocated to existing holders in the proportion of one new share for every eight now held.

Lubrication and Lubricants.—In conjunction with the Discussion on Lubrication and Lubricants which will be held from October 13 to 15 at the Central Hall, Westminster, an exhibition will be held at the Science Museum, South Kensington. The exhibits will include lubricants, bearings, applications of lubrication, filtration, testing and research, as well as an interesting series of exhibits from the Science Museum collections. The exhibition will remain open until October 31. Advance proofs of the papers are now ready, and all information about the Discussion can be obtained from the Secretary, The Institution of Mechanical Engineers, Storey's Gate, London, S.W.1.

A vivid poster recently issued by the L.N.E.R.

New Rope Railway for Nice.—For several months work has been in progress at Sestrière, near Nice, in connection with the construction of a new wire-rope railway to connect the Plateau des Hôtels with the Fraitève mountain. This railway, says Reuters Trade Service from Paris, will have a length of 2,600 metres and will rise 640 metres. It will have two cars each carrying 25 persons. The railway is due to begin working by the end of the year. A garage, large enough to hold 300 motorcars, is also being built.

Port of London Charges.—The Port of London Authority announces certain increases, to take effect on October 8, in its rates and charges, necessitated by the advance of 5s. 6d. a week in the pay of all dock labourers as from September 20. This advance was arrived at by agreement between the National Council of Port Employers and Mr. Bevin, representing the Transport and General Workers' Union and other associated unions, and will apply to all ports in the country. Dues and rent on shipping using the docks, &c., will be increased by 5 per cent. The deduction of 7½ per cent. where now allowed off the rates for discharging cargoes and other services in connection with vessels will be cancelled, and the rates will be increased by 2½ per cent. Regarding dock rates and charges on

import goods other than rent :—(1) the deduction of 7½ per cent. where now allowed will be cancelled and the rates be increased by 5 per cent. ; (2) present deductions of 10 per cent. will be cancelled and the rates be increased by 2½ per cent. ; (3) charges at present shown as net will be increased by 12½ per cent., except for refrigerated and other perishable traffic ; (4) charges on softwood and floated timber at present subject to an increase of 2½ per cent. will be subject to an increase of 15 per cent. With regard to rent on import goods, present net figures will be increased by 2½ per cent., and the present discount of 2½ per cent. on softwood and softwood goods will be cancelled.

Moston Station Improvements.—In order to cater for the increasing traffic at Moston (between Manchester and Middleton) the passenger station is to be reconstructed by the L.M.S.R. In addition to improving the up and down platforms, awnings are to be provided in front of the station buildings on both platforms, and electric lighting installed throughout the station premises. Both passenger and parcels traffic at Moston has been steadily increasing for some years ; in 1932 the number of passengers booked was 135,000, whereas by 1935 this figure had increased to over 160,000.

G.W.R. New Rolling Stock Programme.—With reference to the G.W.R. renewals programme for the coming year as published in our issue of September 17, which provides for the construction of 100 locomotives, 381 passenger vehicles, and 3,600 wagons at Swindon, we understand that the classes of locomotives to be built will be as under :

No.	Type	Class
10	4–6–0	"Castle"
20	2–8–0	"28XX"
10	0–6–0	Standard goods
10	2–6–2T	"51XX"
50	0–6–0T	"57XX"

The central corridor trains will be similar to those recently produced and the buffet cars also are to be very much the same as the latest ones which are now in service.

British and Irish Traffic Returns

GREAT BRITAIN	Totals for 39th Week			Totals to Date		
	1937	1936	Inc. or Dec.	1937	1936	Inc. or Dec.
	£	£	£	£	£	£
L.M.S.R. (6,870¼ mls.)						
Passenger-train traffic...	524,000	512,000	+ 12,000	20,867,000	20,081,000	+ 786,000
Merchandise, &c. ...	532,000	517,000	+ 15,000	19,036,000	18,494,000	+ 542,000
Coal and coke ...	261,000	241,000	+ 20,000	9,830,000	9,266,000	+ 564,000
Goods-train traffic ...	793,000	758,000	+ 35,000	28,866,000	27,760,000	+1,106,000
Total receipts	1,317,000	1,270,000	+ 47,000	49,733,000	47,841,000	+1,892,000
L.N.E.R. (6,315 mls.)						
Passenger-train traffic...	335,000	333,000	+ 2,000	13,659,000	13,070,000	+ 589,000
Merchandise, &c. ...	357,000	354,000	+ 3,000	13,066,000	12,602,000	+ 464,000
Coal and coke ...	269,000	234,000	+ 35,000	9,559,000	8,959,000	+ 600,000
Goods-train traffic ...	626,000	588,000	+ 38,000	22,625,000	21,561,000	+1,064,000
Total receipts	961,000	921,000	+ 40,000	36,284,000	34,631,000	+1,653,000
G.W.R. (3,738½ mls.)						
Passenger-train traffic...	213,000	201,000	+ 12,000	8,812,000	8,562,000	+ 250,000
Merchandise, &c. ...	224,000	210,000	+ 14,000	7,752,000	7,436,000	+ 316,000
Coal and coke ...	112,000	99,000	+ 13,000	4,320,000	3,866,000	+ 454,000
Goods-train traffic ...	336,000	309,000	+ 27,000	12,072,000	11,302,000	+ 770,000
Total receipts	549,000	510,000	+ 39,000	20,884,000	19,864,000	+1,020,000
S.R. (2,157 mls.)						
Passenger-train traffic...	312,000	298,000	+ 14,000	13,113,000	12,457,000	+ 656,000
Merchandise, &c. ...	72,000	70,000	+ 2,000	2,411,500	2,468,500	– 57,000
Coal and coke ...	34,000	30,000	+ 4,000	1,157,500	1,184,500	– 27,000
Goods-train traffic ...	106,000	100,000	+ 6,000	3,569,000	3,653,000	– 84,000
Total receipts	418,000	398,000	+ 20,000	16,682,000	16,110,000	+ 572,000
Liverpool Overhead ... (6½ mls.)	1,271	1,155	+ 116	50,984	46,750	+ 4,234
Mersey (4½ mls.) ...	4,447	4,417	+ 30	162,742	157,632	+ 5,110
*London Passenger Transport Board ...	588,200	568,400	+ 19,800	7,824,400	7,802,900	+ 21,500
IRELAND						
†Belfast & C.D. pass. (80 mls.)	2,174	2,289	– 115	107,074	108,450	– 1,376
,, ,, goods	477	522	– 45	18,661	21,153	– 2,492
,, ,, total	2,651	2,811	– 160	125,735	129,603	– 3,868
Great Northern pass. (543 mls.)	13,900	13,500	+ 400	450,950	439,350	+ 11,600
,, ,, goods	11,050	10,900	+ 150	367,050	380,900	– 13,850
,, ,, total	24,950	24,400	+ 550	818,000	820,250	– 2,250
Great Southern pass. (2,076 mls.)	44,226	41,954	+ 2,272	1,481,286	1,468,421	+ 12,865
,, ,, goods	44,104	46,048	– 1,944	1,588,427	1,618,889	– 30,462
,, ,, total	88,330	88,002	+ 328	3,069,713	3,087,310	– 17,597

* 14th week (before pooling) † 40th week

British and Irish Railway Stocks and Shares

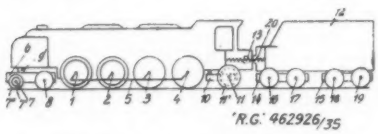
Stocks	Highest 1936	Lowest 1936	Prices Oct. 6, 1937	Prices Rise/Fall
G.W.R.				
Cons. Ord. ...	64¼	45½	65½	–1¼
5% Con. Prefce. ...	126½	116¾	116½	—
5% Red.Pref.(1950)	113	108½	110½	+1
4% Deb.	119½	110½	106	+½
4½% Deb.... ...	121	114	111	—
4½% Deb.... ...	129	121	116½	—
5% Deb.	141	134	128½	—
2½% Deb.... ...	79⅛	74	69½	—
5% Rt. Charge ...	136½	130	127½	—
5% Cons. Guar. ...	135¼	127¾	124	—
L.M.S.R.				
Ord.	35⅝	17	32	—
4% Prefce. (1923)	83	52½	75½	—
4% Prefce. ...	92¾	81	84	—
5% Red.Pref.(1955)	109¼	103¼	106	—
4% Deb.	111¾	105 9/16	102½	+½
5% Red.Deb.(1952)	119⅝	115½	112½	—
4% Guar. ...	106¾	101⅝	100	+½
L.N.E.R.				
5% Pref. Ord. ...	14	9	10	—
Def. Ord.	7¼	4¾	5	—
4% First Prefce.	79¼	55¼	72	—
4% Second Prefce.	31⅞	18¼	29½	—
5% Red.Pref.(1955)	100½	77¾	98	—
4% First Guar. ...	104½	98¾	96	—
4% Second Guar.	99	90	90	—
3% Deb.	85¾	79	76½	+½
4% Deb.	109¾	104½	101	—
5% Red.Deb.(1947)	116¼	110½	108½	—
4½% Sinking Fund Red. Deb.	111½	107½	108	—
SOUTHERN				
Pref. Ord.... ...	98¾	82½	89½	–1
Def. Ord.	27⅝	20⅛	21½	—
5% Pref.	120¾	118½	113½	—
5% Red.Pref.(1964)	119¾	115¼	113½	—
5% Guar. Prefce.	136	129½	125	—
5% Red.Guar.Pref. (1957)	120	115¾	114	—
4% Deb.	117 5/16	109½	105	+½
5% Deb.	140	134	126½	—
4% Red. Deb. 1962–67	116½	110	106½	—
BELFAST & C.D.				
Ord.	9	4½	4	—
FORTH BRIDGE				
4% Deb.	107	105	101½	—
4% Guar. ...	107 5/16	104	100½	—
G. NORTHERN (IRELAND)				
Ord.	19½	9¾	6⅞	—
G. SOUTHERN (IRELAND)				
Ord.	63	41	32¼	—
Prefce.	65	46	40	—
Guar.	97¼	81	73	—
Deb.	99¾	83¼	89¾	+¾
L.P.T.B.				
4½% "A" ...	127¾	121	113½	—
5% "A" ...	138¼	133½	125½	—
4½% "T.F.A." ...	111½	108½	105	—
5% "B" ...	131¾	123¾	117½	—
"C"	112½	93	75½	–1½
MERSEY				
Ord.	40¾	23	27½	–1
4% Perp. Deb. ...	103	98	97	—
3% Perp. Deb. ...	78	74⅝	74½	—
3% Perp. Prefce.	68⅞	63¼	66½	—

ABSTRACTS OF RECENT PATENTS*

No. 462,926. Stabilising Trains

Y. A. Rocard, of 120, rue d'Assas, Paris, France. (*Convention date: France, February 11, 1935.*)

The object of this invention is to minimise sideways oscillation or sway of trains. The invention depends upon the recognition that an important function of the cause of sway is the system of forces produced by the elastic deformation of the wheels and rails in the region of contact. The inventor proposes to utilise this system of elastic forces to exert a stabilising effect on the vehicle. Accordingly, the disposition of the axles and bevel of the wheels are determined in a manner such that the result of the summation, extended to all the axles of a frame, of the quotient of the product of the distance of each axle from the mass centre of the frame, by the bevel of the wheels of this axle divided by the radius of the wheels, is positive; the distance of the axles from the mass centre is taken as positive for the axles situated in front of the mass centre, and as negative for the axles at the rear of the mass centre. An example of an engine and tender having its wheels and axles arranged in accordance with this principle is given. In the drawing (reproduced) the front axle 7 of the bogie

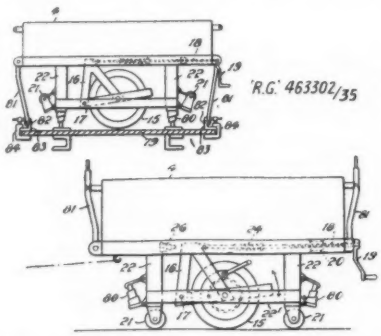


6 is disposed lower and carries smaller wheels with greater bevel, this being represented by the greater radial spacing between the circle 7' representing the edge of the wheel and the circle 7'' representing the edge of the tyre (this bevel of the front wheels of the bogie may be for instance 1/10 instead of the usual ratio of 1/20.) The rear axle 8 of the bogie carries larger wheels with small or zero bevel, as represented in the drawing. Furthermore, the pivoting point of the bogie has been shifted to 9', towards the front axle, in such a manner that the centre of mean distances of the bogie axles is situated substantially behind the pivoting point, this introducing another element of asymmetry, which is desirable for the stability of the engine. The wheels of the front axles 1 and 2 of the main frame have a large bevel, 1/10 for instance, whilst the bevel of the back axle wheels 3 and 4 has been reduced or even suppressed. It is also desirable to reduce or suppress the bevel of the bissel truck 10, except in the cases where it is desirable for the engine to run backwards at comparatively high speeds, in which case it is preferable to give the bissel truck wheels 11 a slight bevel, represented on the drawing by a circle 11' in dotted lines. Lastly, the wheels carried by the tender axles 16, 17, 18, 19 have no bevel. The force of the coupling springs 13 and 20 may also be determined in such a manner that they do not give rise to exaggerated reaction upon the track when the train is rounding curves.—(*Accepted March* 13, 1937.)

No. 463,302. Mixed Road and Rail Vehicles

H. Dietrich, 33, Pfalzgrafenstrasse, Neustadt - on - the - Hardt, Germany. (*Convention dates: September* 21, 1934; *September* 21, 1934; *May* 2, 1935.)

A new type of mixed road and rail vehicle is suggested by this arrangement, in which the inventor proposes to insulate the vehicle from shocks such as those experienced during shunting, by providing it with retractable spring supports upon which to rest when loaded on a rail truck. The road wheels 15 of a trailer 4 are made retractable by being mounted on one arm of a belt crank lever arrangement 16, pivoted at 17 to a rigid undercarriage 22, 22'. This lever 16 is operated by the crank handle 19 through screw rod 18. Wheels 21 on hinged mounts are provided for maintaining the trailer

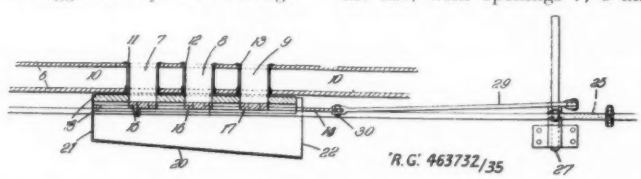


level when disconnected from a tractor. When the trailer is mounted on a truck, the wheels 21 are swung upwardly, whilst springs 80 are swung down under the undercarriage. The road wheels are then retracted so that the trailer rests entirely on the springs 80. The trailer is secured to the truck by means of rods 81 in a manner such as to permit a certain amount of back and forth movement of the trailer. Hence any shock to the truck is partly absorbed by the springs 80, and causes the trailer to sway instead of being jarred.—(*Accepted March* 12, 1937.)

No. 463,732. Controlling Fire-Boxes

R. H. Whitelegg and J. D. Rogers, both of Grand Buildings, Trafalgar Square, London, W.C.2. (*October* 4, 1935.)

According to this invention the quantity of air supplied to a locomotive firebox above the level of the grate is regulated by movable dampers operated by a link mechanism connected to the control rod of the steam valve, so that the draught corresponds to the supply of steam to the cylinders. In one form, shown in plan in Fig. 1, the firebox side-wall is formed, above the fire, with openings 7, 8 and 9 ex-



tending through the water space 10 and fitted with cylindrical liners 11, 12 and 13 respectively. The outer ends of the openings, 7, 8 and 9 are covered by a damper plate 14 of the valve type, which is formed with circular dampers 15, 16 and 17, and which slides in guides 18 and 19. The openings, 7, 8 and 9 are uncovered if the damper plate 14 is moved either to the right or to the left, air being scooped up and projected towards the openings by a cowl 20 having the rear end 21 closed and the front end 22 open. Motion is transmitted to plate 14 from the valve controlling rod by a system of links 25, 29. When the valve controlling rod is in the neutral position, the openings 7, 8 and 9 are completely closed by the dampers 15, 16 and 17 respectively. If the valve controlling rod be moved to open the valves to give either a forward or reverse drive, the damper plate 14 is moved correspondingly either to the left or right, and the dampers 15, 16 and 17 uncover the openings 7, 8 and 9 so as to admit air above the fire. The more the valves are opened to admit steam to the cylinders the more the dampers are opened, and vice versa.—(*Accepted* April 5, 1937.)

No. 463,207. Method of Operating Fire-Grates

A. Borsig Maschinenbau A.-G. of Berlin-Tegel, Germany. (*Convention date: December* 21, 1934.)

From Germany, where the supply of natural mineral oil suitable for firing boilers is not plentiful, comes this suggestion for controlling the combustion of solid fuel in such a manner

* These abridgments of recently published specifications are specially compiled for THE RAILWAY GAZETTE by permission of the Controller of His Majesty's Stationery Office. Group abridgments can be obtained from the Patent Office, 25, Southampton Buildings, London, W.C.2, either sheet by sheet as issued, on payment of a subscription of 5s. a group volume, or in bound volumes, price 2s. each, and the full specifications can be obtained from the same address price 1s. each

that the firing follows the varying amount of steam taken from the boiler. The proposal is to burn fine-grained low temperature distillation coke in furnaces having a free area for the passage of air approximating to only 1 per cent. of the total grate area, and to control the draught and firing to the grate according to the load. Only a portion of the air required is supplied as bottom draught, the rest entering the combustion chamber above the grate with the result that while there may be a high load on the grate, only a small proportion of the fuel takes part in the combustion at any one time. It is stated that the most suitable type is that having a travelling grate with a cover on it, which grate rises from the free end to the discharge end.—(*Accepted March* 24, 1937.)

COMPLETE SPECIFICATIONS ACCEPTED

462,208. Triggs, W. W. (Nash Engineering Company). Pumps.

462,469. Devlin, S. R. Construction of railway carriages and coaches.

462,480. Naisbitt, W. J. Railway sleeper.

462,501. Soc. Anon. des Hauts-Fourneaux de la Chiers. Apparatus for hardening rails.

462,510. Universal - Kugellager - Fabrik Ges. Two-row ball bearings.

462,631. Gfeller, E. W. Heating apparatus utilising exhaust steam.

462,654. Gore, Y. N., and Gore, V. Y. System and means for preventing collisions on railways or the like.

463,302. Dietrich, H. Containers for road or rail transport.

463,207. Borsig Maschinenbau A.G., A., and Geissen, C. Operation of grate-fired steam generators for vehicles.

463,212. Davey, Paxman & Co. (Colchester) Ltd., and Haxell, R. L. K. Construction of multitubular steam boilers.

463,235. Sebek, R. Vehicles for railless traffic.

463,298. Besler, W. J. Engine-driven railway trucks.

462,864. Robertshaw, W. T., and Vance, G. N. Trolley collectors for electric vehicles.

462,926. Rocard, Y. A. Method and means for stabilising rail vehicles.

463,398. Peyinghaus, W. (trading as Eisen und Stahlwerk W. Peyinghaus). Bearings.

463,399. Peyinghaus, W. (trading as Eisen und Stahlwerk W. Peyinghaus). Bearings.

463,429. Standard Telephones & Cables Limited, Brown, A., Dunn, R. H., and McKie, D. G. Electric switches applicable to railway signalling.

463,564. Peyinghaus, W. (trading as Eisen und Stahlwerk W. Peyinghaus). Packing devices for rotary shafts or axles.

463,638. Johnston, G. W. P. Means for opening and closing doors.

463,670. Gresham & Craven Limited, and Gresham, J. N. Train braking systems.

463,680. Renault, L. Safety devices for use on vehicles.

463,886. Naigai Kagaku Seihin Kabushiki Kaisha. Composition for preventing incrustation in boilers.

463,823. Ruhrhandel Ges. Wheels for rail vehicles with conical roller bearings.

464,080. Lechene, F. Valves.

464,097. Keelavite Co. Ltd., and Booth, M. B. Rotary pumps, compressors, prime movers, and the like.

463,951. Capo, E. Vehicle for railway and road service.

463,732. Whitelegg, R. H., and Rogers, J. D. Supply of air to locomotive and like fireboxes.

463,931. Keelavite Co. Ltd., and Booth, M. B. Rotary pumps, compressors, prime movers, and the like.

463,941. Cherry-Burrell Corporation. Lubrication systems.

464,415. Herbert, F. Cooling of moving vehicles.

464,212. Pollak, J. E. (Compagnie Commerciale, Industrielle & Financière Cominfi Soc. Anon.). Vehicle wheels, more particularly wheels for railway vehicles.

Spain under the Valencia Government

A Strategic Bye-Pass into Madrid

The commission charged with the construction of a new railway to improve communications with the eastern side of Madrid has decided, in agreement with the workers' syndicates, to increase the length of the working day from October 1, with the object of accelerating progress in the construction. The railway in question, which was referred to in our news columns on September 10, is about 80 km. in length and will link up Tarancon, on the Madrid-Cuenca line, through Orusco on the narrow gauge Alocen line, with Torrejon de Ardoz on the main Madrid-Saragossa-Barcelona railway, thus short-circuiting the Madrid-Alicante and Valencia main line via Aranjuez, if and when the termination of the Cuenca-Utiel railway gives direct communication between Madrid and Valencia. Meanwhile, the official reason given for hastening the construction of this bye-pass is the improvement of supplies for Madrid, but the real reason is obviously strategic, forced on the military authorities by the interruptions to communications on the Aranjuez line. The original estimate of the time for completion was 40 days (as noted in THE RAILWAY GAZETTE of August 13 last) but it is now reckoned that 80 days will be required, although it is said that some 10,000 men are engaged on the earthworks.

At the same time the Colmenar narrow gauge line will be converted to broad gauge from Mejorada del Campo through Poveda to Madrid, providing an alternative entry into the capital and an alternative terminus on the least exposed side. It is said that some 40 per cent. of the work is completed, but delays are being experienced on account of the length of time required for the delivery of materials.

Petrol Shortage

An Order published in the *Official Gazette* of the Republic at Valencia on September 4 decrees that, in view of the shortage of petrol and the advisability of saving foreign exchange, taxi and town bus services are entirely suspended until further notice, and the use of private cars and lorries is prohibited. Certain rural omnibus services are permitted to continue, but under severe restrictions. The Order was made applicable to Catalonia by the *Official Journal* of Barcelona of September 8. A further decree published about the same time by the Valencia Government legalises the seizures of road transport made by the petrol monopoly (*Campsa*) or by the workers' organisations of the same. Inventories will be drawn up of the material seized, and contractors will be given eight days in which to present claims. The Government reserves the right to declare the seizure definite, subject to fair compensation. Since the issue of these Decrees and owing to the difficulty or impossibility of obtaining fuel, transport by road, except for military and other Government services, is now practically non-existent in that part of Spain which is still under the rule of the Valencia Government.

CONTRACTS AND TENDERS

Edmund Nuttall Sons & Co. (London) Ltd. has received a quarter of a million pound contract from the London Passenger Transport Board for a new Metropolitan Line station at King's Cross. Work will begin immediately. The new station will lie under Euston Road, a short distance west of the existing platforms. Those Metropolitan Line trains which now go no further than Baker Street station will continue to King's Cross. There, city-bound passengers will alight and board a City train at the same platform. The present awkward change at Baker Street will be avoided. The board's stations at King's Cross are used by nearly 40,000,000 passengers a year.

Euston Rehousing Contract

Wheeler Bros. Ltd. has received the general contract for the L.M.S.R. £86,000 scheme involving the erection of five blocks of flats on a 2¼-acre site at York Rise, Highgate Road, N.W.5, required to rehouse tenants on the site of part of the proposed reconstructed Euston station. The buildings are being erected for the L.M.S.R. by the St. Pancras House Improvement Society Limited.

The Newport & South Wales Tube Company has received an order from the Great Western of Brazil Railway for 1,000 solid-drawn Impervico black steel boiler tubes.

Richardson & Cruddas has received orders from the Indian Stores Department for 38 sets of broad-gauge 1 in 8½ acute crossings for 90 R.F.F.B.S.S. rails.

The Chloride Electrical Storage Co. Ltd. has received orders from the Indian Stores Department for 20 lead acid type batteries.

The Gobindo Sheet Metal Works & Foundry has received orders from the Indian Stores Department for 300,000 cotters, for N.W.R. type cast-iron plate sleepers, for 90-lb. rails.

Stanton Ironworks Co. Ltd. has received an order from the Buenos Ayres Great Southern Railway for 5,000 m. of 8 in. dia. iron piping.

Whitelegg & Rogers Limited has received an order from the Crown Agents for the Colonies for six engine sets of Ajax axlebox lubricators for converting 4-6-0 type locomotives of the Ceylon Government Railway from oil to grease lubrication. An order has also been received from the Rio Tinto Railway for complete Ajax equipment for converting one Beyer-Garratt 2-6-2 + 2-6-2 locomotive from oil to grease lubrication, and similar equipment for converting two 2-8-0 type locomotives of the Trans-Zambesia Railway.

The Associated Equipment Co. Ltd. has recently received orders from City of Oxford Motor Services Limited for four Regal and 14 Regent passenger vehicles, and from Scottish Motor Traction Co. Ltd. for 15 Regal and 20 Regent passenger vehicles.

Coaches for Nigeria

Craven's Railway Carriage & Wagon Co. Ltd. has received an order from the Crown Agents for the Colonies for 10 third-class coaches required for the Nigerian Government Railway. These coaches are to be equipped with G. H. Sheffield & Co. (Engineers) Ltd. patent double framed welded bogies and with Isothermos axleboxes, to be supplied by the British Isothermos Co. Ltd.

The Kennicott Water Softener Co. Ltd. has received an order from the L.M.S.R. for two water softening plants, one for installation at Bushbury (15,000 galls. an hour) and one for Walsall (6,000 galls. an hour).

The Madras & Southern Mahratta Railway Administration has placed orders to the inspection of Messrs. Rendel, Palmer & Tritton, as follow :—

Bochumer Verein A.G., for 776 locomotive, carriage and wagon tyres.

Dittmann-Meuhaus & Gabriel-Dergenthal A.G., for 1,000 volute springs.

Guest, Keen, Williams Limited has received an order from the Bombay, Baroda & Central India Railway Administration for 82,900 dogspikes to be supplied to the inspection of Messrs. Rendel, Palmer & Tritton.

The Chinese Government Purchasing Commission, on behalf of the Ministry of Railways, China, has placed the following orders for permanent-way equipment to be supplied to the inspection of Messrs. Sandberg :—

Lancashire Steel Corporation, 700 tons of rails.

Guest Keen Baldwins Iron & Steel Co. Ltd., 31½ tons of fishplates.

Dorman Long & Co. Ltd., 31½ tons of fishplates.

Guest, Keen & Nettlefolds Limited, 14 tons of fishbolts and nuts, and 49 tons of dogspikes.

The Bengal-Nagpur Railway administration has placed the following orders :—

R. Y. Pickering & Co. Ltd., 1,370 drawbars.

John Lang & Son Ltd., two screwcutting lathes.

Morgan Crucible Co. Ltd., tilting furnace and fan.

Alfred Herbert (India) Limited has received orders from the Indian Stores Department for one horizontal boring, milling, drilling and tapping machine, complete.

Leyland Motors Limited has received an order from the South African Railways & Harbours Board for four double-deck bus chassis. This is believed to be the first order placed by the South African Railways for chassis suitable for double-deck bodies.

Leyland Motors Limited has also received the following orders :—

Western S.M.T. Co. Ltd., 20 oil-engined Titans.

Greenock Motor Services Company, 12 oil-engined Titans.

East Yorkshire Motor Services Limited, 15 oil-engined Titans, and 20 oil-engined Tigers.

The Indian Standard Wagon Co. Ltd., through Burn & Co. Ltd., has received orders from the Indian Stores Department for 1,350 right-handed and 1,350 left-handed steel side buffer springs.

Beyer, Peacock & Co. Ltd. has received an order from the Buenos Ayres Western Railway for 30 cast-steel locomotive crossheads.

Locomotives Required for Egypt

The Egyptian State Railways Administration invites tenders receivable at the General Management, Cairo Station, by December 7 for the supply alternatively of two or four 4 ft. 8½ in. gauge 2-4-2 type steam locomotives.

The Chief Controller of Stores, Indian Stores Department (Engineering Section), Simla, invites tenders, receivable by November 10, for the following machine tools required for the North Western Railway at Moghalpura :—

One double-headed locomotive horn cheek grinder.
Two oscillating tool grinders.
Two special purpose boiler copper stay machines.
One 3-ton steam hammer.
Two 1,000 lb. capacity tilting crucible oil-fired furnaces.
One 12-in. by 16-in. table universal milling machine.
One radial drilling machine, 4 ft. radius.
Three jolt squeeze moulding machines.
One portable universal swivelling head drilling machine.
One six-throw reducing and forging machine.
One bearing-spring top plate eye rolling machine.
One complete set right-hand and left-hand burnishing apparatus.
One wheel tread grinding machine.
Two electrically-driven extra heavy type carriage and wagon wheel lathes.
One 24 in. by 12 in. universal tool and cutter grinder.

The Chief Controller of Stores, Indian Stores Department (Electrical Section), Simla, invites tenders, receivable by November 4, for the following equipment required for the Electrical Repair Shops, North Western Railway Power House at Moghalpura :—

One valve lapper complete.
One automatic coil winding machine.
One adjustable head, drum-type armature and coil winding machine.
One coil winding and forming machine.
One stator winding gun and vice.
One mica undercutter capable of undercutting V or U slots.
One coil taping machine to tape all sizes.

The South African Railways & Harbours Administration is calling for tenders (No. 1487) for the supply and delivery of quantities of steelwork for bridges (including bolts, nuts and rivets) and rolled steel beams for a road ramp. Tenders endorsed "Tender No. 1487 for Bridgework" should reach the Secretary to the Tender Board, Railway Headquarter Offices, Johannesburg, by December 6. Local representation is essential, and the Department of Overseas Trade is prepared to furnish firms desirous of tendering for the supply of steelwork of United Kingdom manufacture, and not represented in South Africa, with the names of United Kingdom merchant houses with local connections who may be willing to handle tenders on their behalf.

OFFICIAL NOTICES

Buenos Ayres Western Railway Limited

THE Directors of the Buenos Ayres Western Railway Limited hereby give notice that the Transfer Books and Registers of the 5 per cent. Preference Stock and the 4½ per cent. Preference Stock will be closed from Saturday, the 9th October, to Thursday, the 21st October, 1937, both days inclusive.

Warrants for the payment of dividends at the rate of 5 per cent. on the 5 per cent. Preference Stock and 3½ per cent. on the 4½ per cent. Preference Stock in respect of the year ended 30th June, 1937, will be posted on the 4th November.

The Annual General Meeting will be held on the 3rd November, 1937.

By Order of the Board,
N. F. E. GREY,
Secretary.

River Plate House,
Finsbury Circus,
London, E.C.2.
6th October, 1937.

The Buenos Ayres Great Southern Railway Company Limited

THE Directors of the Buenos Ayres Great Southern Railway Company Limited hereby give notice that the Transfer Books and Registers of the 5 per cent. Preference Stock and the 6 per cent. Preference Stock will be closed from Saturday, the 9th October, to Thursday, the 21st October, 1937, both days inclusive.

Warrants for the payment of dividends at 5 per cent. on the 5 per cent. Preference Stock and 3 per cent. on the 6 per cent. Preference Stock in respect of the year ended 30th June, 1937, will be posted on the 4th November.

The Annual General Meeting will be held on the 27th October, 1937.

By Order of the Board,
N. F. E. GREY,
Secretary.

River Plate House,
Finsbury Circus,
London, E.C.2.
6th October, 1937.

Government of India

APPLICATIONS are invited for three appointments in the Transportation (Traffic) and Commercial Departments of Indian State Railways.

Candidates must be British subjects of non-Asiatic domicile and must have been not less than 21 nor more than 25 years of age on the 1st August, 1937. They must either (*a*) have obtained an Engineering or Science degree of a recognised University or possess a technical diploma or certificate acceptable to the High Commissioner for India or (*b*) have had not less than two years practical training, as pupil or apprentice, in the Traffic Department of a British or Colonial Railway, following a sound general education.

Further particulars and forms of application may be obtained, on application by postcard, quoting Appointment 1/23 from the High Commissioner for India, General Department, India House, Aldwych, London, W.C.2. Last date for receipt of completed applications 5th November, 1937.

RAILWAY AND OTHER REPORTS

Buenos Ayres Western Railway.—It is announced by the directors that payment of a dividend of 5 per cent. for the year ended June 30, 1937, upon the company's 5 per cent. preference stock will be made on November 5 next. On the same date a dividend of 3½ per cent. on the company's 4½ per cent. preference stock will be paid in respect of the same period.

Buenos Ayres Great Southern Railway.—The board of directors announces that payment of a dividend of 5 per cent. for the year ended June 30, 1937, upon the company's 5 per cent. preference stock will be made on November 5 next. On the same date a dividend of 3 per cent. on the company's 6 per cent. preference stock will be paid in respect of the same period.

Ribble Motor Services Limited.—An interim dividend of 4 per cent. is announced, the same as a year ago.

Babcock & Wilcox Limited.—Announcement is made of an interim dividend of 4 per cent., the same as a year ago.

Trent Motor Traction Limited.—Payment is announced of an interim dividend of 4 per cent. on the ordinary shares, the same as a year ago.

Kitchen & Wade Limited.—An interim dividend of 12½ per cent. actual has been declared, comparing with 7½ per cent. actual paid in October, 1936.

Stewarts and Lloyds Limited.—Half-yearly dividends on the 6 per cent. first cumulative preference, the 10 per cent. cumulative second preference, and the 5 per cent. cumulative third preference stocks will be payable on October 30.

Thos. Firth and John Brown Limited.—An interim dividend is announced on the ordinary capital of 6 per cent., free of tax, payable on October 14. An interim dividend of 5 per cent., free of tax, was paid in October last year, and the present distribution represents the improved trading of the company.

Hoffmann Manufacturing Co. Ltd.—The directors announce an interim dividend of 10 per cent., free of tax, on the ordinary shares, payable on October 13. Last year's interim dividend was 6 per cent., free of tax.

Hurst, Nelson & Co. Ltd.—Net profits, after taxation, for the year ended July 17 last amounted to £32,234, against £30,190 for the previous year. As already announced, the dividend on the ordinary shares is to be raised from 6¼ per cent. to 7½ per cent., and the amount to be carried forward is £8,575, against £7,841 brought in.

Laycock Engineering Co. Ltd.—The dividend recommended for the year is 5 per cent. on a capital of £300,000, payable on October 31. The company was registered on December 19, 1935, and the first dividend paid was 2½ per cent. for the first half of 1936, on a capital of £200,000, which was increased to £300,000 in December, 1936.

Enginemen's Mutual Improvement Conference

The third conference of the Federation of Enginemen's Mutual Improvement Classes was held at the South Kensington Science Museum on October 3. This technical organisation now embraces 106 local classes with a total membership of over 7,000. Mr. L. P. Parker, M.I.Loco.E., who presided, was re-elected President for 1938, and Mr. W. A. Agnew, M.I.Mech.E., was again elected Vice-President. The Federation Secretary is as last year, Mr. A. King, G.W.R. Loco Dept., Oxford, and the Assistant Secretary Mr. A. Jennings, L.N.E.R. The group secretaries are as follow: Mr. C. Mathers (G.W.R.), Mr. W. Price (L.M.S.R.), Mr. A. Jennings (L.N.E.R.), Mr. A. Elston (S.R.). A display of technical books, diagrams, and a very fine three-cylinder instructional model by Mr. Tolley were on view, and after the meeting the delegates inspected the museum.

The chairman expressed satisfaction that the conference had again met in such an appropriate place, which was the technical centre of the Empire, and hoped that the deliberations would be worthy of the meeting-place. A discussion on present and future activities of the movement brought forth helpful advice, suggestion, and criticism. The conclusions of the delegates might be summed up thus: "Technical education with the co-operation of the railway companies." The motto of the F.E.M.I.C. is "Efficiency," and its badge a winged-wheel.

Barsi Light Railway

The 43rd ordinary general meeting of the Barsi Light Railway Co. Ltd. was held in London on October 5. Sir Ernest Bell, C.I.E., Chairman, mentioned in his speech the fact that gross earnings had dropped from Rs. 19,26,216 for the previous year to Rs. 15,34,963, a fall equivalent to £29,345, or more than 20 per cent. Passenger earnings were 23 per cent. lower than in the previous year, and there was a short-fall to Rs. 1,91,473 on goods traffic. Working expenses were reduced from Rs. 11,34,729 to Rs. 10,87,014, the net earnings being Rs. 4,47,949 as against Rs. 7,91,486 in the previous year. Indian taxation, however, offered some relief in that only Rs. 2,244 were payable as compared with Rs. 71,084, so that although the net result of working proved to be £33,650 as against £54,302 in the previous year, the balance remaining was £26,441, enabling a dividend of 2½ per cent. to be paid on ordinary stock. The principal reason for the reduction in receipts and dividend was unregulated road competition, a matter which was, however, at last being improved by Government action.

L.M.S.R. LOCOMOTIVE NAMING CEREMONY.—At Morecambe Promenade station on Wednesday last, the L.M.S.R. "Patriot" class locomotive No. 5526 was named *Morecambe and Heysham* by Councillor Michael Benson, Mayor of Morecambe and Heysham.

Railway Share Market

There has been a general movement to lower levels in all sections of the stock and share markets, with the exception of British Government stocks. Sentiment has been affected by the heavy reaction of New York markets, the decline in commodity prices and the absence of improvement in international affairs. Despite the excellent news from trade centres the volume of business in the stock and share markets has remained very small, and until there is improvement in this respect no general recovery in prices is expected.

Home railway stocks were only moderately lower, despite the very reactionary trend of general market conditions, and buying of the junior issues was reported on any decline. The traffic figures for the past week created a very good impression and aroused hopes of substantial expansion in receipts during the remainder of the year owing to the operation of the higher railway rates. Once again L.M.S.R. ordinary probably attracted chief attention, but owing to general market conditions the price was lower at 32. The £47,000 traffic gain last week was considered to be very good. Great Western ordinary came in for a good deal of profit-taking on the part of those who had purchased at a rather lower figure a short while ago, but the price subsequently had a steadier appearance at 65½. The railway's £39,000 traffic gain for the past week exceeded general anticipations, as did the increase of £20,000 shown by the Southern. Later the preferred ordinary and deferred stocks of the latter also appeared to be firmer at around 89¾ and 21⅛, L.N.E.R. second preference was reactionary and declined fractionally to 29½, although the £40,000 rise shown by the traffics was up to best expectations. London Transport "C" went back further to around 75¼ pending the dividend announcement.

Ordinary stocks of the leading Argentine railways declined sharply, but there was some demand for the preference stocks prior to the dividend declarations, B.A. Gt. Southern 5 per cent. preference was steady, as was the 6 per cent. preference. The dividend on the latter is 3 per cent. against nil a year ago. B.A. Western 5 per cent. and 4½ per cent. preference stocks were steadier. The dividend decisions were in accordance with market expectations, although there had been hopes the 4½ per cent. preference would receive its full rate, as against the 3½ per cent. announced. Another heavy decline was shown by American Railway stocks. Canadian Pacific was rather weaker.

Traffic Table of Overseas and Foreign Railways Publishing Weekly Returns

	Railways	Miles open 1936-37	Week Ending	Traffics for Week: Total this year	Traffics for Week: Inc. or Dec. compared with 1936	No. of Weeks	Aggregate Traffics to Date: Totals: This Year	Aggregate Traffics to Date: Totals: Last Year	Aggregate Traffics to Date: Increase or Decrease	Shares or Stock	Prices: Highest 1936	Prices: Lowest 1936	Prices: Oct. 6, 1937	Prices: Yield % (See Note)
				£	£		£	£	£					
South & Central America	Antofagasta (Chili) & Bolivia	834	3.10.73	20,990	+ 5,880	40	660,740	540,810	+ 119,930	Ord. Stk.	25	15¼	18	Nil
	Argentine North Eastern	753	2.10.37	10,943	+ 702	14	145,740	130,427	+ 15,313	,,	12	2	10½	Nil
	Argentine Transandine	—	—	—	—	—	—	—	—	A. Deb.	54	45	85	4 11/16
	Bolivar	174	Aug., 1937	4,800	— 100	35	45,600	52,500	— 6,900	6 p.c. Deb.	9	5	8½	Nil
	Brazil	—	—	—	—	—	—	—	—	Bonds.	16	11½	15	3¼
	Buenos Ayres & Pacific	2,806	2.10.37	80,335	+ 3,100	14	1,084,554	1,019,869	+ 64,685	Ord. Stk.	17½	6	10	Nil
	Buenos Ayres Central	190	18.9.37	$133,400	— $17,300	12	$1,722,900	$1,502,400	+ $220,500	Mt. Deb.	31½	11	31	Nil
	Buenos Ayres Gt. Southern	5,084	2.10.37	119,169	+ 7,169	14	1,634,802	1,500,902	+ 133,900	Ord. Stk.	31¾	13⅝	21½	Nil
	Buenos Ayres Western	1,930	2.10.37	45,285	+ 3,697	14	626,428	540,584	+ 85,844	,,	29⅝	11	18½	Nil
	Central Argentine	3,700	2.10.37	137,087	— 9,807	14	1,842,510	1,886,253	— 43,743	,,	32 29/32	8⅝	19½	Nil
	Do.	—	—	—	—	—	—	—	—	Dfd.	21	4½	11½	Nil
	Cent. Uruguay of M. Video	980	25.9.37	14,252	— 472	13	191,346	190,529	+ 817	Ord. Stk.	7⅝	3	5	Nil
	Cordoba Central	1,218	2.10.37	26,990	— 1,360	14	493,140	483,960	+ 9,180	Ord. Inc.	5	1	3¼	Nil
	Costa Rica	188	Aug., 1937	24,617	+ 7,487	9	49,305	38,568	+ 10,737	Stk.	36½	32	34	5 7/8
	Dorada	70	Aug., 1937	16,900	—	35	122,400	112,200	+ 10,200	1 Mt. Db.	107	101½	104½	5⅝
	Entre Rios	810	2.10.37	15,136	+ 2,130	14	196,250	173,032	+ 23,218	Ord. Stk.	17	6	10½	Nil
	Great Western of Brazil	1,092	2.10.37	8,700	+ 1,400	40	286,000	291,800	— 5,800	Ord. Sh.	½	3/16	½	Nil
	International of Cl. Amer.	794	Aug., 1937	$412,515	+ $95,199	35	$4,038,361	$3,624,520	+ $413,841	—	—	—	—	—
	Interoceanic of Mexico	—	—	—	—	—	—	—	—	1st Pref.	½	-/6	½	Nil
	La Guaira & Caracas	22¾	Sept., 1937	4,465	+ 115	39	47,665	41,545	+ 6,120	Stk.	9	3	7½	Nil
	Leopoldina	1,918	2.10.37	27,862	+ 2,533	40	928,169	753,638	+ 174,531	Ord. Stk.	10½	3½	5½	Nil
	Mexican	483	30.9.37	$427,700	+ $76,400	39	$4,036,000	$3,336,800	+ $699,200	,,	1¼	¼	½	Nil
	Midland of Uruguay	319	Aug., 1937	7,032	— 939	9	14,578	15,754	— 1,176	,,	1½	⅛	½	Nil
	Nitrate	384	30.9.37	4,373	+ 1,518	39	118,014	93,600	+ 24,414	Ord. Sh.	63/6	41/9	21¼	Nil
	Paraguay Central	274	25.9.37	$3,019,000	+ $632,000	13	$42,252,000	$33,466,000	+ $8,786,000	Pr. Li. Stk.	85	71	81½	7⅜
	Peruvian Corporation	1,059	Sept., 1937	89,953	+ 4,468	13	263,674	257,046	+ 6,628	Pref.	15	9	8½	Nil
	Salvador	100	25.9.37	¢12,025	+ ¢513	13	¢148,284	¢135,627	+ ¢12,657	Pr. Li. Db.	18	16	22½	Nil
	San Paulo	153½	26.9.37	$2,363	+ 1,487	39	1,287,799	1,155,014	+ 132,785	Ord. Stk.	86	46½	82 2/8	6 1/16
	Taltal	160	Aug., 1937	4,555	+ 930	9	7,495	6,150	+ 1,345	Ord. Sh.	11 5/32	14/-	1	10
	United of Havana	1,353	2.10.37	14,693	— 324	14	242,462	216,842	+ 25,620	Ord. Stk.	3¼	1	2½	Nil
	Uruguay Northern	73	Aug., 1937	794	+ 7	9	1,560	1,692	— 132	Deb. Stk.	5	3	6	Nil
Canada	Canadian National	23,766	30.9.37	1,175,476	— 7,791	39	29,215,059	26,889,662	+ 2,325,397	—	—	—	—	—
	Canadian Northern	—	—	—	—	—	—	—	—4 p.c.	Perp. Dbs.	76	51	67½	5 15/16
	Grand Trunk	—	—	—	—	—	—	—	—	4 p.c. Gar.	104⅝	99⅝	100½	4
	Canadian Pacific	17,228	30.9.37	954,600	+ 20,600	39	21,020,400	19,988,800	+ 1,031,600	Ord. Stk.	16⅝	10 15/16	9	Nil
India†	Assam Bengal	1,329	10.9.37	36,397	+ 3,375	23	579,201	539,562	+ 39,637	Ord. Stk.	87⅝	82¼	77½	3⅞
	Barsi Light	202	10.9.37	2,220	+ 203	23	59,482	55,777	+ 3,705	Ord. Sh.	77½	65½	46	10⅞
	Bengal & North Western	2,111	10.9.37	61,573	+ 1,834	23	1,311,189	1,205,391	+ 105,798	Ord. Stk.	319	292 5/8	308	5 13/16
	Bengal Dooars & Extension	161	20.9.37	5,423	+ 1,768	24	66,241	59,812	+ 6,429	,,	127½	118	87½	6 5/16
	Bengal-Nagpur	3,268	20.9.37	168,975	+ 27,938	24	3,243,639	2,839,135	+ 404,504	,,	104	100¼	90½	4 7/16
	Bombay, Baroda & Cl. India	3,072	30.9.37	226,350	+ 9,150	26	4,366,650	4,049,700	+ 316,950	,,	114	110½	111½	5⅜
	Madras & Southern Mahratta	3,229	10.9.37	128,475	+ 2,083	23	2,499,802	2,470,583	+ 29,219	,,	116½	108½	108½	7⅜
	Rohilkund & Kumaon	546	10.9.37	11,569	+ 1,563	23	250,104	238,657	+ 11,447	,,	311	286	310	5 13/16
	South Indian	2,531¾	10.9.37	117,892	+ 4,597	23	1,865,229	1,806,275	+ 58,954	,,	107½	102 5/16	101½	5 7/16
Various	Beira-Umtali	204	July, 1937	97,402	+ 29,426	43	774,298	645,518	+ 128,780	—	—	—	—	—
	Egyptian Delta	620	20.9.37	7,295	+ 172	24	111,490	102,452	+ 9,038	Prf. Sh.	21¼	15⅜	15⅜	Nil
	Great Southern of Spain	—	—	—	—	—	—	—	—	Inc. Deb.	11½	1⅛	3½	Nil
	Kenya & Uganda	1,625	Aug., 1937	198,117	+ 31,586	35	1,922,899	1,783,395	+ 139,504	—	—	—	—	—
	Manila	—	—	—	—	—	—	—	—	B. Deb.	50½	37	46	7 5/8
	Midland of W. Australia	277	Aug., 1937	12,678	+ 1,026	9	22,923	21,865	+ 1,058	Inc. Deb.	97	93½	95	4 5/16
	Nigerian	1,900	21.8.37	46,647	+ 21,508	21	1,012,819	590,693	+ 422,126	—	—	—	—	—
	Rhodesia	2,451	July, 1937	412,400	+ 109,751	43	3,764,458	2,887,519	+ 876,939	—	—	—	—	—
	South Africa	13,263	18.9.37	662,543	+ 46,604	25	15,542,128	14,598,566	+ 943,562	—	—	—	—	—
	Victoria	4,774	May, 1937	822,932	+ 43,220	48	9,342,068	8,986,232	+ 355,836	—	—	—	—	—
	Zafra & Huelva	112	July, 1937	9,085	—	35	89,945	57,843	+ 32,102	—	—	—	—	—

NOTE.—Yields are based on the approximate current prices and are within a fraction of 1/16.

† Receipts are calculated @ 1s. 6d. to the rupee. § ex dividend. Salvador and Paraguay Central receipts are in currency.

The variation in Sterling value of the Argentine paper peso has lately been so great that the method of converting the Sterling weekly receipts at the par rate of exchange has proved misleading, the amount being overestimated. The statements are based on the current rates of exchange and not on the par value.